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## The Oil Man's Calendar

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|---|---|
| **FEB.** | |
| **4** | **National Oil Scouts and Landmen's Association, Dallas, Texas.** |
| **15-18** | **American Institute of Mining and Metallurgical Engineers, New York.** |
| **APR.** | |
| **8- 9** | **American Petroleum Institute, Division of Production, Eastern District, Wm. Penn Hotel, Pittsburgh.** |
| **7- 9** | **American Association of Petroleum Geologists, Fort Worth, Texas.** |
| **MAY** | |
| **5- 6** | **Petroleum Electrical Association, Houston.** |

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# *FOR OUR ARMED FORCES*

*INDUSTRIAL AMERICA HAS PLEDGED*

*ALL-OUT AND EVER-INCREASING PRODUCTION*

*FOR OUR ARMED FORCES*

*—THAT THEY MAY QUICKEN THE DAY OF VICTORY*

*—THAT THEY MAY RETURN IN SAFETY*

*—AND THAT THE WORLD MAY BE ASSURED*

*OF A LASTING PEACE*

# The Changing Panorama

## Peak Demand Likely; Presages Shortage

FACED with prospects that military needs will more than offset reductions in civilian consumption, the United States oil industry is confronted with the necessity of meeting an all-time peak demand before the end of 1943. The economic committee of PIWC, which to date has done a remarkably accurate job of analyzing the industry's trends ahead of time, has predicted that demand by the end of the year will be 450,000 barrels per day greater than currently. Because stocks of petroleum have been reduced to quite low levels, this means that consumption must be filled from current production. In view of declining producing ability, this situation indicates that a shortage of petroleum is a distinct possibility during 1943.

The nation must look to Texas for the increased output to meet this anticipated enlarged demand. Other states cannot materially boost their crude production, and some will produce only at reduced rates. Continued lower producing levels in Oklahoma and Illinois would throw an additional burden on Texas. These states cannot make up further losses in production by drawing on stocks. They did this during 1942, and consequently their volume of oil in storage has waned to very low levels. Unfortunately, Texas is the only state that added to its stocks during 1942. It would be much better if additions had been made elsewhere, but transportation troubles prevented.

A part of the anticipated enlarged demand can be made up by boosting natural gasoline and other supplies, but the PIWC economic committee foresees a gain of only 35,000 barrels daily from these sources. Consequently, Texas may be called upon to furnish an additional 415,000 barrels per day during the fourth quarter of 1943, and more if Oklahoma and Illinois are unable to maintain their present production.

It is doubtful if Texas can furnish 400,000 to maybe 500,000 barrels of additional oil each day by the end of the year. The state's ability to produce substantial additional quantities from existing reserves without waste has not declined as much as in other states, because limited transportation in 1942 restricted Texas output. Nevertheless, discovery of smaller volumes of new oil than in the past and reduced development rates has resulted in a lessened producing capacity in Texas.

For Texas' present fields to produce such additional quantities will necessitate adoption of several steps, some of which seem obvious. Salt water withdrawal rates in East Texas should be reduced, or offset by returning larger volumes to the producing formation. In this way, because the total fluid extracted would not be increased, the field could produce more oil without injuring its reservoir pressure. West Texas, where much of the state's additional producing capacity is located, should be provided with sufficient pipeline outlets to move the oil to locations where it will become available to refineries.

## Need Another Pipe Line to East Coast

THE dependence of the United States upon Texas to meet increased petroleum demand during 1943 not only raises the question of how long this state can fill additional consumption requirements, but also brings forth the question of transportation capacity again. Texas' producing ability will be of little value unless there are ways of transporting the state's crude oil and petroleum products to consuming regions. Although a substantial portion of the vast pipe line program is being completed, and the big-inch system is scheduled for completion all the way to the Atlantic Seaboard by summer, the problem is still that of getting additional oil to this area.

The present pipe-line program is calculated to furnish the capacity to move only the minimum requirements of the East Coast to that region, and calls for maintenance of Oklahoma and Illinois produciton along with tank car shipments. The transportation capacity added by the overland program does not take into consideration that most of the oil sent from the United States to the Atlantic battlefronts will be taken from Eastern seaports. It is advantageous to do this, so as to shorten tanker routes to Europe and Africa and thereby speed delivery. Consequently, more oil than needed by East Coast industry and civilians must be carried to the region. Military demand, it is said, may offset the full capacity of the big-inch line.

Therefore, to take full advantage of whatever ability Texas has to produce more will require additional shipping facilities. The only answer appears to be a second pipe line from Texas to the Eastern area, preferably a product line as proposed. Nearly a year would be required to build the line. Further delay will constitute another "to little and too late" experience.

## Prospects Improved For Higher Prices

DEVELOPMENTS continue to improve the prospects for the industry to obtain higher crude-oil prices and also for adjustment in product prices.

Foremost and also the latest encouraging actions is the resignation of Leon Henderson from OPA and appointment of Sumner T. Pike to make a study of the oil-price structure for OPA. Whoever succeeds Henderson probably will have somewhat different views on so complex a subject, and consequently it is likely there may be a general rejuggling of ceiling prices. The successor will want to make a showing, and to do so must make changes. Pike's appointment assures the industry that its problems are to be given attention. His background appears favorable. He knows many oil men, understands the industry, and is expected to make a sincere unbiased study. Consequently, the change in OPA heads and the almost concurrent appointment of a satisfactory party to study the petroleum situation, gives the industry an excellent opportunity to tell its story to receptive ears.

Recent enlargement of Ickes' powers, with the creation of PAW, should also prove helpful. While there is still some question as to just how much actual power was given him, there is no doubt but that other government agencies will be inclined to listen to Ickes now—something they were not always prone to do in the past. Ickes is more familiar with oil's problems and outlook than any other government man, and being its head naturally is desirous to see petroleum do its best. Consequently, he is expected to favor a favorable price structure.

Meanwhile, the growing realization that increasing military demand may exceed producing and refining ability, is adding much pressure to the plea for higher crude oil prices and revised product postings.

All in all, the chances of getting better prices appear to have brightened materially in the past few weeks.

## Major Oil Activity Changes in 1942

THE varied influence of war on oil activities is revealed by preliminary figures on oil operations during 1942, there being sharp changes in different product use that caused major adjustments. A few operations hit new peaks, but generally reductions took place. Most drastic drop was in well drilling.

The outlook for 1943, however, indicates peak demand, which should result in increases of production and crude runs to stills to record levels by the end of the year. Record fuel oil needs, a feature of 1942, will continue. Drilling, no doubt, will continue at below normal levels, due to equipment scarcity and wide spacing regulations.

After a year of steadily increased activities, the industry entered 1942 with crude production and runs to stills at an all-time peak and drilling operations almost at record levels. The sharp shrinkage that followed Pearl Harbor brought these operations to low levels by March and April. Since that time, crude production and runs to stills made up much of their lost ground as military usage grew. Drilling recovered only slightly, however. It is these trends that presages peak production and refining operations by the end of 1943, and continued small drilling.

Here are a few preliminary figures on 1942 operations of the industry:

Crude oil production registered its third decline since 1930, totaling approximately 1,385,000,000 barrels compared with 1,404,000,000 barrels in 1941. Crude runs to stills amounted to 1,240,000,000 barrels in contrast with 1,409,000,000 barrels in 1941. Despite lower runs to stills, crude-oil stocks were drawn upon to an extent that the end of the year saw inventories almost at a 20-year low and still going down.

Output of refineries underwent major adjustment. The rising trend of gasoline production being reversed, production of the commodity dropping from 671,000,000 barrels in 1941 to about 610,000,000 barrels in 1942. This reduction permitted lowering of gasoline stocks, despite curtailment of civilian use. Consequently, gasoline stocks the end of the year were the lowest since end of 1938, being nearly 12 percent under a year ago.

On the other hand, output of residual and distillate fuels was at an all-time peak, and still not sufficient to prevent heavy drafts on stocks. About 355,000,000 barrels of residual fuel were produced, whereas output in 1941 was 342,000,000 barrels. Nevertheless, residual fuel stocks at the close of the year were at a 10-year low, being 22 percent under a year ago. Distillate fuel production amounted to almost 200,000,000 barrels the past 12 months, compared with 189,000,000 barrels in 1941, but stocks of the commodity were down nearly 11 percent from a year ago.

Drilling activity shrunk drastically, there being an indicated completion of 21,275 wells against 32,265 in 1941.

## California Output In Sharp Rise

WITHOUT any appreciable help from new discoveries, California oil production has risen more than 160,000 barrels daily since last March. At its current rate, around 785,000 barrels per day during the past three weeks, the state is producing at a near all-time peak. Total production of the state for 1942 was about 248 million barrels according to preliminary figures, against 230 million last year. Only three years in history has the state recovered more oil. Most recent year was in 1938, when production was just under 250 million barrels. Top year for the state was in 1929, when 292 million barrels were produced. This represented a daily average of 800,000 barrels, or just above its average of 785,000 barrels for the past three weeks.

In view of the lack of new discoveries in the state for the past three years, this increase in output is surprising to many. This should not cause too much optimism, for it certainly raises speculation as to how long such a high production rate can be sustained. The Pacific theater of war needs every drop California is producing, so naturally every incentive given operators to boost production is a step in the right direction.

## Why Not Lift Big Inch Above Floods?

IN WHAT was far from record flood, Ol' Man River swept away 600 feet of the "big inch" pipe line crossing. A delay of 25 days is indicated before the breech can be repaired. Had the line been in operation, the break would have seriously tied up urgently needed and equally as heavily counted-on materials for the Eastern Seaboard.

This break, while not irreparable, gives no promise of permanent repair. The big inch, on account of its size and consequent gripping surface for current disturbances, is and will remain extremely vulnerable wherever the line passes below rivers. One of the principal arguments for the pipe line over marine transportation is reliability; the ability to make deliveries on schedule, regardless of natural hindrances. Until the big inch is made river-proof, it faces periodical failure.

There are bridges over all the streams the line traverses. One at Thebes crosses crosses the Mississippi River within reach of a short loop from the 24-inch pipe line. That structure could carry the added load of the big inch, and thus put the line out of reach of even the highest floods. Why not go over the rivers?

## Slaughter Could Yield More Oil

WITH the industry looking more and more toward West Texas as a source of supply for filling expected enlarged war demand for petroleum, the Slaughter field steadily looms more important as one of the most likely areas to yield additional supply. Now second to only the East Texas field in size, currently producing more oil than any other West Texas pool, Slaughter has a potential exceeding 1,250,000 barrels daily, and its boundaries have not been defined in any direction.

Of the 62,000 acres now comprising the proven area, none has been discredited through dry holes. Ultimate proven area may reach 75,000 acres.

Withdrawal rates have been held in check, daily output being near 30,000 barrels, which is approximately the pipe-line-outlet capacity. Low withdrawal rates, coupled with careful production methods have husbanded the bottom-hole pressure at approximately 1550 pounds per square inch. Consequently, over 1100 of its wells are still flowing naturally.

The actual amount of oil recovered through October, 1942, was 13,402,000 barrels. As of July 1, 1942, the total field potential, based on 1102 wells, was 1,202,724 barrels of oil daily. By December 1, the number of wells had increased to 1178 and the potential to 1,267,410 barrels daily. Potentials are determined by 6-hour open-flow test, the results of which are multiplied by 4 to arrive at the 24-hour potential flow.

At present the field has but 5 pipeline outlets, with a capacity of approximately 30,000 barrels daily. It can readily be seen that additional pipeline facilities will be required if the field's producing ability is to be taken advantage of.

# WASHINGTON ROUNDUP

By B. F. LINZ
Washington Correspondent

**New P-98 Order Grants Higher Preference Ratings**

**Fear of West Coast Shortage May Result in Heavy Oil Price Increase and Pipe Lines**

**OPA Eliminates Price Control On Aviation Gasoline**

**Dry Gas Prices Can Be Boosted In Some Instances**

HIGHER preference ratings for the delivery of materials for all branches of oil activity were granted the industry in a revised P-98-b order issued by the War Production Board at the close of the year.

With an AA-2x rating, producers will be able to secure quicker delivery of needed materials than heretofore has been possible with the A-2 rating which has been the highest granted the industry.

The East Coast situation continued to harass administration officials concerned with oil, and at the turn of the year it was admitted that the situation had shown little improvement and was not likely to do so before spring. In some sections of the East, distributors were unable to deliver all the oil prayed for by chilly householders and many homes were entirely without fuel for periods running as high as ten days.

Even the efforts of James F. Byrnes, director of economic stability, who called in the heads of a half-dozen railroads, failed to accomplish anything toward balancing the situation, and serious consideration was being given to cutting off the supply of gasoline for nonessential driving to free tank car space for heating oil.

**PREFERENCE RATINGS:** Preference ratings for the oil industry were raised by the War Production Board in an amended Order P-98-b, issued on the recommendation of PAW.

At the same time, the uncertainty under which the industry has operated because of the temporary character of the P-98 orders previously issued was eliminated by a provision making the new order effective until revoked. The new P-98-b retains the A-2 and A-1-A preference ratings previously granted but adds a much higher rating of AA-2X, all to be applied on the delivery of materials required either (1) for completing alterations involving the use of additional materials valued at $500 or less, (2) for materials required exclusively for research with currently available research facilities, (3) for materials necessary for repair maintenance and operating supply purposes, and (4) for materials to be used in any operation directly incident to the discovery, development or depletion of petroleum pools.

The ratings however, will not be applicable to the acquisition of materials which otherwise are obtainable on the date required; the use of which can be eliminated by substitution of less scarce materials or by changes of design that will not seriously reduce operating efficiency in excess of a 90-day supply, or restricted or prohibited by other orders or regulations of the WPB or of equivalent authority in Canada.

PAW officials explained that the new order contains only three major changes from the previous regulations, the higher preference rating now available, the extension of preference ratings to materials for alterations up to $500 and the provision of ratings for materials for research.

### Inventory Sales

WPB also issued an amendment to Preference Rating Order P-98-c, permitting the sale of inventory stocks of materials by an oil operator to an oil industry supplier for direct resale to another operator.

The original order provided only for the sale of stocks by one operator directly to another. And the amendment, it was said is designed to permit supply houses to negotiate sales and deliveries of materials between operators, acting in the capacity of brokers.

**APPLICATIONS:** Applications for priorities on materials are being cleared through the PAW in three days or less, as the result of a streamlining of the process which gives district offices authority to handle applications for small quantities without reference to Washington, it was reported December 30 by Deputy Administrator Davies.

Davies said that during October, the five district offices and the Canadian Oil Controller's office countersigned some 9600 applications under P-98-b for materials valued at about $950,000, an average of $99 per application, while the Washington office approved 364 applications for $1,098,428 worth of materials, an average of $3017 per application.

Summarizing activities during the last week of November, he said the Canadian Oil Controller's office and the PAW organization in Washington and in the field handled 2334 certificates with a value of $4,427,652, of which about 71 percent in number and 32 percent in value was under P-98-b and 27 percent in number and 40 percent in value under PD-1A.

Project authorizations on PD-200 covered only about two percent of the number but 27 percent of the value of all authorizations. An additional 47 PD-1A certificates representing a value of $153,000 were issued for foreign consumption.

Approximately 17 percent of the certificates and 42 percent of the value was for raw materials, as compared with 83 percent of certificates and 58 percent of value for fabricated products.

**WEST COAST:** Attention of Administration officials concerned with oil shifted during the week from the highly unsatisfactory Atlantic seaboard situation to the West Coast, with a view to averting all possibility of a similar crisis along the Pacific.

As a first step in a program to insure larger supplies of fuel oil in the West, the OPA was studying an increase in the price of heavy California crude, and was cooperating with other agencies in the development of plans for a 10 or 12-inch pipe line from El Paso to Southern California, while the recent consummation of the reciprocal trade agreement with Mexico, paving the way for in-

creased imports of her oil, raised the possibility of a pipe line link between southern Mexican fields with the port of Salina Cruz, on the Gulf of Tehuantepec, where a West Coast fueling station might be established. A final step in the West Coast program, intensified development of California fields was suggested.

California crude prices have long been out of line with prices nationally, and there has been considerable pressure on the OPA to remedy the situation. It has been contended that a better price might result in additional production of 50,000 barrels or more daily, and would tend to relieve the fears of Navy officials of a shortage of supply for the Pacific fleet within a comparatively short time.

The proposed El Paso-Los Angeles pipe line, first suggested in 1937 during the investigations of the Temporary National Economic Committee, now is being urged as essential should United Nations' naval strength concentrate in the Pacific and the Western producing area be called upon to supply the oil needed for an all-out drive against Japan. It is pointed out that the West coasts of both North and South America suffer from a serious lack of fueling bases, in contrast with the East coasts.

OPA officials also have under study plans for compensating small refiners for the additional production costs involved in shifting their yields from the money crop of gasoline to the lower-priced heating oils and other products needed as a result of the war, but it is not likely that any definite action will be taken until Henderson's successor takes office.

☆

**GAS PRICES:** Increased costs of expanding dry gas production by broader drilling programs are recognized in an order of the Office of Price Administration effective January 2 under which the base date upon which maximum gas prices are determined, is changed from October, 1941, to May 1, 1942.

OPA officials explained that the change will permit increases in prices paid for the gas in the field in some instances, but will not affect consumer prices. It was ordered to relieve producers who, between October, 1941, and May, 1942, entered into contracts involving drilling and expanded operations and it was said, will "substantially eliminate" production obstacles.

Price increases resulting from the new base date will vary as between producing areas, facilities and methods of operation. Notably in the Appalachian region and California, but in some important sections, such as the Mid-Continent, where no substantial price increases occurred between October and May, prices will not be materially changed.

The amendment to the oil price schedule ties dry gas contracts and maximum prices to the source of supply and provides three criteria under which dry gas producers may determine maximum prices:

1. Where contract for sale was in effect May 1, 1942, maximum prices for sales under the contract, renewals or new contracts shall not exceed the price which could have been charged under the terms of the contract in effect as of that date.

2. Where a seller of dry gas had a contract in effect on May 1, 1942, but no contract with a particular purchaser subsequently executed contracts with purchasers, shall not exceed in price the levels possible as of May 1.

3. Where no contract existed on May 1, 1942, seller's prices in contracts made effective after that date shall not exceed in price those in effect May 1, 1942, by the seller's closest competitor selling to the same class of purchaser.

☆

**AVIATION GAS PRICE:** All price controls on aviation gasoline of 87 octane and higher ratings were eliminated by the Office of Price Administration December 29.

The action was taken on the recommendation of PAW approved by the Defense Supplies Corporation and merely extends to the lower octane ratings relief from unnecessary regulations previously provided for gasoline of 91 octane and higher.

All the gasoline removed from price control is allocated by government authority.

☆

**EAST COAST:** Top officials of a half-dozen major railroads met with Stabilization Director James F. Byrnes December 29 to canvass every possibility for relieving the oil shortage in the East.

The meeting was called by Byrnes following two pre-Christmas conferences with PAW, OPA and ODT officials on the supply crisis which necessitated a 60-hour suspension of gasoline sales in 17 Eastern states and the District of Columbia.

Among the transportation officials who attended the conference were: M. W. Clement, president of Pennsylvania Railroad; F. E. Williamson, president of New York Central; E. E. Norris, president of Southern; J. L. Beven, president of Illinois Central; J. M. Kurn, president of St. Louis-San Francisco, and L. W. Baldwin, president of Missouri Pacific. Also present were John J. Pelley, president of the Association of American Railroads; Administrators Ickes and Henderson and Director Eastman.

Meanwhile as PAW and OPA officials acted to iron out difficulties arising from misinterpretation governing exchanges of product and prepared to reduce supplies for communities where population has declined to provide more heating oil and gasoline for greatly expanded defense centers, it was disclosed that the mid-December cold spell had had a serious effect on already shrunken inventories, particularly in heavy fuel oil, kerosine and crude.

Winter transportation difficulties also were demonstrated in the heavier burden thrown on the railroads through the closing of the New York state barge canal and the halting of lake navigation.

Adverse weather depressed rail deliveries to the East to the lowest point in a long period, an average of only 700,827 barrels per day during the week ended December 26 being reported by PAW. This was a decline of 43,196 barrels from the level of the previous week. The decline was attributed to severe weather conditions and floods, and was expected to continue into the week just ended.

"Heavy withdrawals from East Coast petroleum inventories continued during the week ended December 26 and underscored all other developments in the critical East Coast petroleum supply situation," PAW declared in its weekly review of conditions.

To protect dealers in the 30 states where heating oil is rationed, the OPA on December 29 authorized an increase of 0.3 cents per gallon in maximum fuel-oil tank-wagon prices.

The Byrnes conference did nothing to dispel official pessimism over the situation. While the railroad executives voiced the hope of increasing deliveries this month, Byrnes said after the meeting that this would only serve to maintain present rations.

A rerouting of oil trains and expedition in the unloading of tank cars at destination, but dependent upon approval of the WPB for the securing of the materials necessary for the improvement of terminal facilities, will tend to increase deliveries, he said, and some additional volume might be secured by the movement of oil in drums in box cars; there are other expedients which might be adopted, including the use of

a new canvas-and-synthetic-rubber lining which would convert box cars into tank cars, which the carriers will try out in the next 30 days to the extent of 200 cars.

Byrnes placed little faith in a barge program as a means of alleviating the situation, pointing out that it could not be put into service in less than six months and "that," he said, "means that we have to look for relief from the immediate situation to the railroads and railroad tank cars."

"My own conclusion," he said, "is that the statement of Secretary Ickes and Price Administrator Henderson still stands true, that nothing that we have discussed offers any hope for a belief that we are going to be able to increase the supply of fuel oil and gasoline above the figures heretofore determined by those two gentlemen. The military needs make any other prediction impossible."

While the conference was under way, ODT Chief Joseph B. Eastman issued an order "freezing" in the eastern petroleum service all tank cars already in operation.

Part of its campaign for a 20 percent increase in rail deliveries, the ODT order, affecting nearly one-half of the Nation's 143,000 tank cars, would prohibit the withdrawal of any cars in the eastern service without specific authority, unless they are immediately replaced with cars of at least equal capacity and not less than 7000 gallons.

The policy of the ODT to have only large cars in the eastern service has resulted in shifts to such an extent that while the number in use December 1 was somewhat less than a month earlier the total capacity of the fleet was more than 58,500 gallons greater.

Eastman disclosed that 85 percent of the traffic is now moving in solid trains on through schedules. New routes have been designated for the movement of trains designed to make use of the most direct routes.

☆

**WASHOUT:** Flood waters added to the vicissitudes of the "big inch" pipe line December 29, washing out 600 feet of the Mississippi River crossing and setting back completion of the line for several weeks.

In a telegram to PAW, B. E. Hull, vice president of War Emergency Pipelines, Inc., reported that the river rose 15 feet in less than 24 hours and snapped the pipe and anchoring cables despite all efforts to fight off disaster.

Crossing crews were immediately recalled from the second leg of the project and equipment en route to river crossings in Indiana and Ohio was ordered diverted to the Mississippi to replace that which was lost, but it was not expected that the river would fall sufficiently to enable a resumption of work before January 10, in which event the crossing cannot be completed before January 25.

# Rapid Progress on PAW Pipe Line Projects; Some Are Finished

RAPID progress is being made on the PAW pipe line relocation program and the turn of the year saw several of the projects nearing completion.

The projects are under way, the most ambitious, of course, being the big-inch line, the first leg of which is practically completed and ready to go into operation as soon as pumps and tanks are completed.

A PAW report on the other projects shows the following progress:

Project No. 1—To increase crude oil movements north and east from Texas by 27,000 barrels daily by enlarging the existing system and reversing the Tuscarora line: Stanolind has laid 16 miles of pipe on a 56-mile run of 12-inch loops between Graford, Texas, and Healdton, Oklahoma, with completion expected January 15, to make 30,000 barrels daily available to the Chicago area of which 20,000 barrels is to move eastward by reversal of the Tuscarora line; Southern is awaiting delivery of pumping equipment to complete its York station which will increase the movement across Pennsylvania by 5000 barrels; Tide Water expects to receive equipment for its Green Brook, New Jersey, station about February 1 and have it in operation by March 15, increasing its movement by 2000 barrels daily; all other units under this project completed.

Project No. 2—Plantation pipe line extension from Norfolk to Richmond, Virginia, and stepping up of Baton Rouge-Greensboro line from 60,000 to 90,000 barrels daily: (a) Bayou project for 80 miles of 8-inch and 200 miles of 10-inch line for gathering system, laying of 8-inch pipe nearly completed and 130 miles of 10-inch pipe in ground, construction of 51 miles of Baytown feeder lines started, and work under way at 9 of the 11 station sites; line completed to handle 30,000 barrels daily by January 1, which will be increased to 43,000 barrels by January 25 and 60,000 barrels by March 1. (b) 14 additional stations on Baton Rouge-Greensboro pipe line; building construction at intermediate stations 60 percent complete and electric wiring 55 percent installed; pump bases completed at 11 stations and pumps and motors set on foundations at 1 station; main line pumps and motors received at 6 stations; 50 percent of total material requirements shipped, and completion expected by January 15. (c) Extension to Richmond: 65 percent of right-of-way secured and 5 miles of pipe laid; 93 percent of Illinois line in West Texas taken up, and pipe shipments to North Carolina and Virginia under way according to schedule; completion expected March 15.

Project No. 3—Reversal of Sun-Susquehanna Line, construction of 82 miles of Ohio Emergency Link, increase in capacity of Shell products line, and connection of Standard (Indiana) products line to Shell at Zionsville: 27 miles of pipe laid on Ohio Emergency Link; 75 percent of required pipe received from West Texas and balance en route; pump station building near Willard, Ohio, completed. The Tiffin-Akron link is designed to make available a cold-weather system to take the place of lake tanker movement from Toledo to Cleveland. During the period between the closing of lake navigation and the opening of the line, tank cars will carry some of the oil and additional quantities will be taken from Cleveland and Boardman, Ohio, terminals. Completed line will handle 20,000 barrels of products daily.

Project No. 4—To increase lake tanker movement to Buffalo, reverse Keystone line from Buffalo south, reverse Keystone line from Pittsburgh east, and construct Sinclair line from Philadelphia to Steubenville, Ohio: Reversal of Keystone Buffalo line abandoned as not justified because of lack of supply; Keystone Pittsburgh line already reversed and handling 26,000 barrels daily; Construction work on Sinclair line resumed West of Greensburg, Pennsylvania, and Steubenville terminal completed to handle 15,000 barrels daily.

Project No. 5—Reversal of pipe lines from Port Arthur to El Dorado, and construction of 10-inch line from El Dorado to Helena, Arkansas: New 10-inch line from El Dorado to Helena operating at 25,000 barrels daily, will be increased to 35,000 barrels by January 15 and 55,000 barrels by February 15; 5 80,000-barrel storage tanks at Helena completed, leaving 4 more to be built; tank-car-loading facilities at Helena completed; all other units under this

[*Continued on page 41*]

# Higher Prices Needed to Assure Ample Oil Supply

**Rising demand and low stocks necessitate finding new fields, protecting stripper wells and producing conservation methods — Incentive for which can be boosted by higher crude prices.**

By E. O. THOMPSON
Chairman, Texas Railroad Commission

THE oil industry goes into the year 1943 with a positive assurance of a firm and constantly rising demand for crude oil and all its products.

The Petroleum Industry War Council at its last meeting stated that, in its opinion, the demand for all oils would be increased by 400,000 barrels per day by the third quarter of 1943. With a war on, which is a mechanical war, with oil as its motivating and propulsive energy keeping airplanes flying and tanks rolling and ships plowing through the seas, and with a civilian population under rationing crying for more oil and its products throughout the land, there can be no question but what the demand is firm now, next month, and for the months to come.

Stocks of crude oil above ground in storage are, in the opinion of many, perilously low; as a matter of fact, they are rapidly approaching a 20-year low. Stocks today stand at 234,000,000 barrels. This is the lowest in 20 years except for the one period in 1939 when stocks dropped to 229,000,000 barrels, which is only 5,000,000 below the present level. It will be recalled that in 1939 the industry was saying that it had too much crude on hand, or rather they were saying that too much crude was then being currently produced and a price cut of 20 cents a barrel was put into effect because of alleged over-production, whereupon the oil producing states, in order to prevent premature abandonment of the 294,000 stripper wells in the United States, shut in their production as much as it could be shut in for a 15-day period to the end that the cry of overproduction could be met. It will be recalled that the oil-producing states from the Gulf to the Great Lakes closed in for a 15-day period and it was then, in the fall of 1939, that stocks dropped to 229,000,000 barrels, which is only 5,000,000 barrels below the present level. We are wondering if these levels are not too low, in view of the assured increasing demand. These are matters that the industry should ponder.

We have steadfastly contended that a greater stock should be kept on hand. Happily, the question of how much crude should be produced, which in turn governs how much is in storage at all times, has been placed in the hands of the Petroleum Administrator for War. The Railroad Commission of Texas, where a large part of the nation's oil is produced, has unanimously gone on record publicly that the Railroad Commission of Texas considers the directives of the Petroleum Administrator for War to be orders of the Commander-in-Chief of the Army and Navy in time of war and, therefore, any directives which he sends us will be religiously carried out to the letter. So if it should be decided that stocks are too low, they can be built up at the discretion and upon the orders of PAW. The authority is definitely now in one place. The Petroleum Administrator for War has a grave responsibility and we feel it the duty of everyone to follow his orders implicitly. Texas is going to do exactly that.

Oil is in this battle just like ammunition. As a matter of fact, it is going to take oil to get the ammunition to the firing line, by boat, by land, and by air.

### East Texas Water-Oil Ratio

The adoption of the new water-oil ratio rule in the East Texas field is a great scientific advance in the production of oil from fields which have a known water drive. The East Texas field can produce 650,000 barrels per day of fluid. This fluid can be all oil or oil and water combined. I mean by this that 650,000 barrels of fluid can be withdrawn from the field per day and still the bottom-hole pressure can be maintained at its present level of 1017 pounds per square inch. Thus we must consider how much salt water is being produced and then subtract from that amount of salt water produced the amount of salt water that is returned to the structure to ascertain the amount of oil that can be produced without causing a drop in the bottom-hole pressure. For example, if 450,000 barrels of water is produced and 200,000 barrels of salt water is returned to the structure, that would mean a net water to be considered of 250,000 barrels. Subtract this 250,000 barrels of water from the 650,000 barrels of fluid that can be withdrawn and you have 400,000 barrels balance of oil that can be withdrawn from the field without waste. As you increase the amount of water that is returned to the reservoir, then obviously you can increase the amount of oil that can be saved each day from the field. If all the water that was produced was returned to the reservoir, then the field could produce 650,000 barrels of oil because it does not reduce the pressure any more to produce oil than it does to produce water.

Then it follows, as the night the day, that, if you tell us how much oil you desire to take from the East Texas field in any amount of less than 650,000 barrels, that amount of oil can be produced without waste by simply reducing the water-oil ratio from 10 to 1, which we have established as a starter, down to 0, which would allow 650,000 barrels per day to be produced. For example, if it became necessary and desirable to produce 150,000 barrels more crude oil from the East Texas field, then all that would be necessary to be done in order to produce this amount of oil in time of need would be to reduce the water-oil ratio to 5 to 1, namely, to permit only 5 barrels of water to be withdrawn to each barrel of oil and this would increase the production of oil from its present 360,000 barrels to 510,000 barrels. So, the water-oil ratio rule is a flexible one which will permit East Texas to deliver oil to the top of the ground instead of

water, and the marginal-well law is met by allowing a man to produce all he can produce provided he returns the water to the structure so as not to do irreparable damage to the field. What we really are doing is prorating motivating energy.

The adoption of this rule and its prompt enforcement will be the equivalent of the discovery of a new 600 million-barrel oil field, because it is definitely established that from 6 to 8 hundred million additional barrels of oil will be recovered from the East Texas field by returning the water to the structure, at the same time doing violence to no existing scientific rule. By allowing a bonus for the re-injection of water and providing the means for the same so every operator can comply, the commission has done no violence to the marginal-well law.

As a matter of fact, it is much better to save and produce oil from existing fields than it is to discover a new field in the present scarcity of materials. The East Texas field is already fully equipped with wells and pumps and pipe lines and every facility that is needed to handle the oil, whereas a new field would require much critical material. It is my considered opinion that the 990 wells in the East Texas field that are now being flowed by jetting with gas will go back to flowing naturally under their own pressure when sufficient water is re-injected into the reservoir. The salt-water company has plans on the way now that will return 200,000 barrels of salt water per day to the structure by February 1 and many operators are converting water wells to re-injection wells to re-inject their own water and that of their neighbors. The bonus for this is 1 barrel of oil for each 50 barrels of salt water re-injected into the reservoir. Indeed the East Texas field has taken on much life by the introduction of this scientific water-oil ratio order.

I have found no petroleum engineer who says that it is not a sound scientific conservation rule. Certainly, any rule that would deliver 600,000,000 extra barrels of oil from an existing oil field is a meritorious one and certainly it is oil that we are trying to produce, not water. We recognize that oil is produced with the water, so we allow the water to be produced to bring the oil up with it and then give credit for returning the salt water to the structure for the purpose of pressure maintenance.

### Must Maintain Reserves

As we come to the end of 1942, and get well into the second year of our global war of men and machines, never before has it been so important to the future of the world that a clear picture be had of the oil industry.

It is a comfort to know that we are now and will presently be able to meet the needs of this global war from the nation's oil reservoirs and particularly from those of Texas; but to indulge in no false optimism, it is necessary to realize that in view of the unprecedented demand which may be expected for oil to keep the war machines operating we must maintain all our reserves at an optimum rate of flow, and that is not so simple a matter as may appear on the face of it.

I emphasize the words "all our reserves." That word "all" includes slightly under 3 billion barrels of reserves in stripper wells, much of which will not be produced unless there is a real incentive to the operator to produce it. Under our system of economics, the real incentive is price.

To maintain reserves it is eqaully important that (1) new fields be discovered and (2) stripper wells be kept producing so that no oil shall be lost because of economic abandonment. Standing in the middle of these two extremes, in the function of a governor on the speed of a car, is the device of proration. If it were not for proration flush wells would be produced at much more rapid rates, there would be an excess of supply over demand and consequently the price would shrink to the point where production from stripper wells would become unprofitable.

Proration as an incident to conservation has acted as a price stabilizer, and it has kept price at a relatively low level. It should be understood that price is not fixed by proration, but proration has had the incidental stabilizing effect of seeing that prices did not go up. Naturally if the full market demand of all oils is fully met the price will remain static. Who pays more when you can fully satisfy your needs at the going price? Both ends of the oil-production see-saw are kept in balance, the flush field and the field nearing depletion.

Today, other factors have entered the picture, principally governmental price-fixing and a definite slack in the discovery of new reserves.

Had this slack in discoveries come at a time when normal peacetime economic factors prevailed, the result would have been to make the production from stripper wells more valuable in terms of dollars, since it unquestionably has become more precious in terms of actual need. But price fixing stepped in to halt the normal economic response. The stripper's position was further complicated by the constantly increasing cost of operating his wells. He is being forced to abandon precious oil, leave it in the ground, because it is economically unsound to produce it on a stripper-well basis, and no matter how patriotic the operator of the stripper well may be, his is no bottomless pocketbook to absorb loss piled upon loss. He could not keep it up if he wanted to.

There has been much talk about the statistical position of stripper wells but never before have sound figures been obtainable. States in the Interstate Oil Compact recently made authoritative surveys of the stripper-well problem in each state, and these were coordinated at the meeting of the compact in Oklahoma City in December, 1942.

These figures have not before been published and are extremely significant. In all the states there are 294,000 stripper wells; they produce nearly 200,000,000 barrels of oil yearly; the total oil in the ground which will be produced if production be kept economically feasible, is 2,781,767,000 barrels.

But is that stabilization being achieved? The figures emphatically say "No." They say that from 1935 through 1941, wells were abandoned which could have produced 192,276,000 barrels. If we ever have days of oil famine in this nation—and particularly if that famine should strike while we still need oil for ships and machines of war, it will be a tragedy of starving in the midst of plenty for want of foresight.

Now, that 1935-41 abandonment figure is a reflection on the economic structure in peacetime. Bad as it is, the impact of war doubled the seriousness of the picture.

Figures on abandonment were compiled covering the first six months of 1942, essentially the first six months of the war. Remembering the seven-year record of 192 plus million barrels meant an annual abandonment rate of 27,610,000 barrels over the period, consider the total for the war half-year: 24,230,260 barrels.

In other words, the stripper operator has been so hard hit that he almost doubled his rate of abandonment of recoverable reserves in 1942 over the 5-year rate.

For many months, myself and others interested in this problem have been urging at every opportunity that the price of oil be boosted, for the one purpose of keeping these stripper wells in operation. Now we have cold, unalterable statistics to prove our contention.

It is a serious economic problem; I consider it one which must, in the interest of winning this war, be solved early in 1943.

The increase in the price of oil will also furnish added incentive to the wildcatter in his search for new oil fields.

During the last war oil went to $3.50 per barrel to encourage the development of proper reserves. The price of oil today governs the rate of discovery three years hence. Are we sure that our reserves will be adequate in 1946? It is safer to take no chances. In the past a price increase has brought discoveries.

# Many Benefits Make Gas Return Project Exceptionally Profitable

By JOHN C. ALBRIGHT

**Benefits include increased oil and natural gasoline recovery, higher price due to improved gravity, and less equipment wear because of reduced pumping time.**

SEVERAL distinct and somewhat unusual results have followed the application of a gas-drive, or recycling program to the properties of Kewanee Oil Company in the East Burbank Extension of Oklahoma, commonly called the Stanley Stringer. Perhaps the most important is the substantial increase in the quantity of oil recovered. Another profitable result of the gas drive and the concurrent removal of a long standing vacuum from the pool, is a gratifying percentage of oil raised from a lower to a higher price bracket due to an increase in gravity. Another advantage accredited to the recycling of the residue gas is the almost phenomenal increase of natural gasoline extracted from the gas which is processed by a gasoline plant in a nearby area, which is so efficient that nothing remains in the gas after processing except methane, ethane and a small percentage of propane. Practically dry gas is then returned for recycling through the sand.

The Stanley Stringer is well fitted for a gas recycling program, as the body of the producing sand is quite porous, which allows the gas injected through the input wells to travel freely through the formation. Moreover, its physical characteristics, such as permeability, are such that exceptionally large quantities of gas can be introduced into the reservoir at remarkably low pressure. Gasoline plant residue gas at the commonly held pressure of from 30 to 40 pounds is ample to supply virtually all the gas required to operate the gas-drive project. This feature of the field makes it possible to provide a low-cost volume of gas, since it is not necessary to operate a separate compressor plant to boost pressures as high as that required in many projects of similar nature.

The East Burbank Extension is an oil reservoir, or trap, obviously formed as an off-shore bar by an ancient sea which deposited a narrow strip of sand in a crescent shaped channel eroded in the shale beds. This strip of productive area extends from a point north of Shidler to the South Burbank pool to which it is joined as it widens perceptibly. Both sides of the pool grade abruptly from a productive sand to impervious shales containing neither oil nor gas. Since it has been proven many times that an oil reservoir will give up only a relatively small percent of the original oil in place at the time of discovery unless some form of secondary production is applied, engineers of Kewanee Oil Company made an exhaustive study of the Stanley Stringer to decide what form of secondary practice should be followed. Depletion curves were plotted for each lease and each individual producing well, and were subsequently combined in a composite study of the entire group of leases so that an overall picture could be obtained.

The calculations were set up with the year 1934 as a beginning and carried through to 1960. The study was made on the supposition that the vacuum existing in 1938 would be maintained consistently at 10 inches during the life of the field. Under these conditions, and all the wells being pumped in the usual manner, the production of the field was expected to decline from a recovery of 158,923 barrels of oil in 1938, to 115,595 barrels in 1942, and then gradually fall off until only 37,332 barrels were expected as a total production volume in 1960.

The secondary method decided upon after all data had been gathered and studied from every angle was that of repressuring. Fourteen of the producing wells were selected as injection wells, but the program had hardly got underway when a statewide shut-down order was issued in the summer of 1939 affecting not only the Stanley Stringer, but every well in Oklahoma.

The wells on all the properties had always been well maintained and cleaning was confined to only a few of the input locations, with nothing done to the remainder other than pulling the tubing and rods and removing rig-fronts and other unnecessary surface equipment. The salvage value of the tubing, rods and surface equipment was found to be high and in condition to be used elsewhere as occasion demanded.

The input wells selected were removed from the list of active producers only after a thorough study of effective locations, so that as great a number of producing wells as possible might be benefited from one injection well. The connections at the input wells are not complicated, and consist of the least amount of fittings. After the tubing was removed, the top of the casing was conditioned to take an ordinary collar into which was screwed a swedge nipple reducing the size of the casing to standard two-inch. A meter run and a recording orifice meter was placed at each injection well, with a check valve inserted in the two-inch line between the meter and the well head, and gate valves to control the quantity of gas required to obtain maximum results. As most of the wells had been produced with individual pumping units with walking beam and original re-arranged rig front, it was a relatively simple matter to rearrange the fuel system to carry gas from the lease mains to the input well head.

About the time the project was begun, the Department of Interior issued an order directing that the vacuum consistently maintained on the field should be reduced from 10 inches Hg. to only 2 inches Hg. at the produced gas meters. This reduction of the vacuum coupled with the State shut-down order caused a disruption of oil migration from the formation to the producing wells, which resulted in a marked re-

duction of oil production for the remainder of 1939. Total repressured leases produced approximately 300 barrels per day in December of 1939 and January, 1940, but in February the effect of the injected gas began to be noticeable, production for March climbing back to around 400 barrels per day. By June, the daily production had increased to 465 barrels per day, compared with an expected decline curve recovery of 373 barrels per day. Based on this study of the field, the total area under gas drive should have produced 136,408 barrels of oil in 1940 if operated under vacuum and without gas injection. Due to the recycling program the leases actually produced a total of 159,071 barrels for that year, an increase of 22,663 barrels, or 16.6 percent above the expectancy. These curves are illustrated in Figure 1.

Return of gas to the formation began in June, 1939, when a daily average of 74,000 cubic feet was injected. This volume was increased through the remainder of the year until a daily average of 1,008,000 cubic feet was being returned to the sand in December of that year. The volume of gas produced with the oil showed a decided increase almost immediately after gas was started into the input wells, increasing in volume practically parallel to the injection curve. The gross gas-oil ratio for the area at the beginning of the injection program was 664 cubic feet per barrel of produced oil, and climbed to 2518 cubic feet per barrel by December. This rapid migration of injected gas through the sand body indicated almost immediately that the property should be operated under a controlled gas drive instead of a repressuring project as originally expected. It was evident that the success of the project depended upon the sweeping effect of the gas traveling through the sand moving the oil from the pore spaces to producing well bores. This can be seen by inspection of the curve representing the total repressured leases, since both oil production and gross oil production follows closely the line representing the input volume.

This condition showed the importance of reservoir control in the project. The selection of input wells were changed in some instances so that the gas-injection rates might be adjusted to the character of the project. Each producing well now is equipped with individual meter loops, so frequent metering may be accomplished to determine the migration of the injection gas and its relation to individual well performance. The oil gathering system is so laid out that individual-well production tests can be taken as frequently as desired to determine the effect of the gas drive. Data have been obtained on reservoir conditions, and production figures are collected and included in a comprehensive monthly report so the project can be maintained at the most efficient point by comparing current conditions with those encountered in preceding months.

The gas injected is supplied to the leases at pressures varying from 30 to 35 pounds pipe-line gauge, while the pressure required at the injection well head varies from 12 to 25 pounds, having an average for the group of properties of 19½ pounds. This pressure was sufficient to introduce a daily average of 1,460,000 cubic feet for June, 1942, with individual input wells ranging from 22,000 to 158,000 cubic feet, depending upon the lease, the condition of the reservoir and various other factors governing production of oil and injection of gas.

### Gravity Increases

The effect upon the gravity of the produced oil by the recycling of pressure gas, and the reduction of a long-standing vacuum, has been pronounced. For the year 1938, a total of 90.6 percent of the production from all leases fell into the 38° API bracket, with the

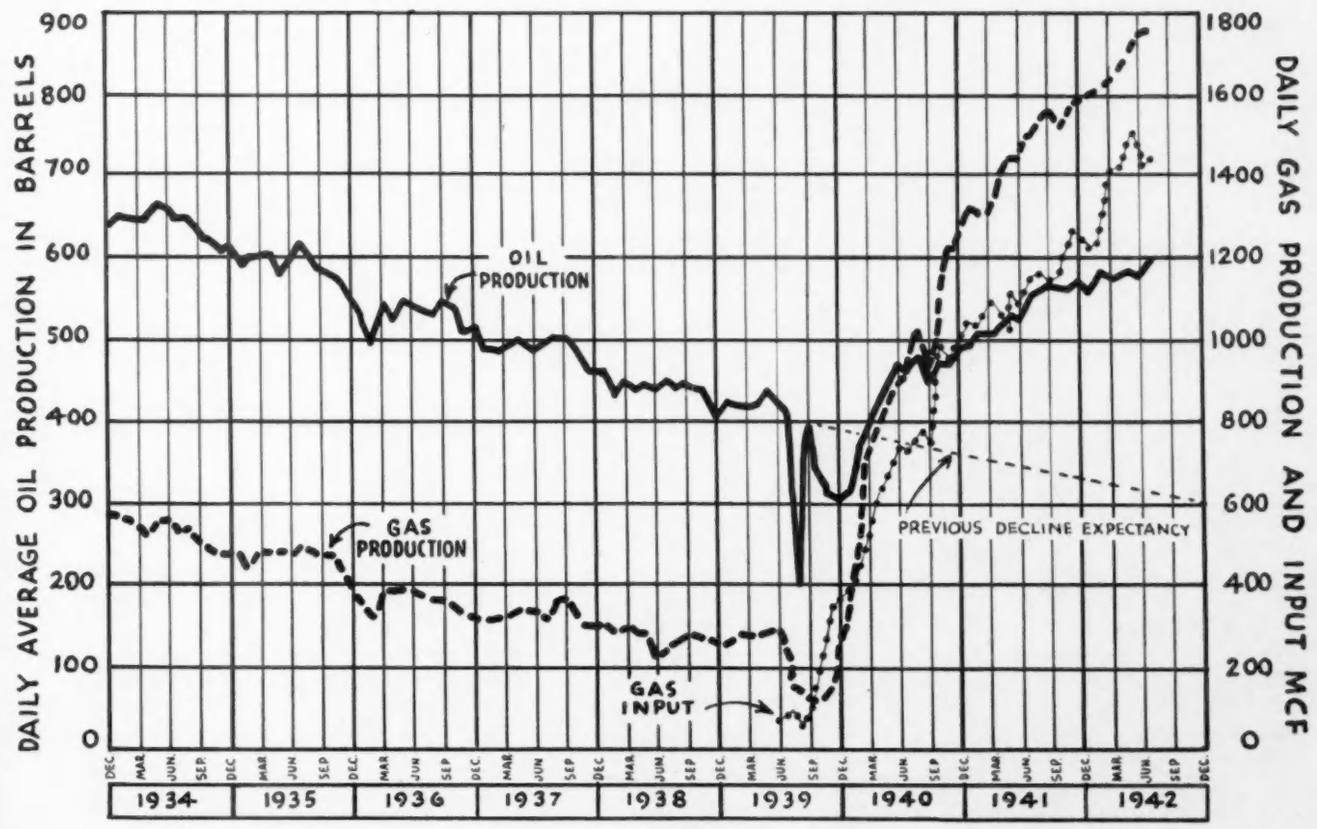



**FIGURE 1**

**Production and injection record of all repressured leases in the Stanley Stringer, or East Burbank Extension, field. A marked increase in crude oil and gas production is shown since the early part of 1940. Gas injection was commenced in June, 1939, but was delayed by the statewide shutdown of August that year. Today production is far ahead of the decline curve expectancy under operating conditions existing previous to gas injection.**

**TABLE 1**

**Improvements in Production and Gravities as a Result of Gas Drive**

(Gas Injection Commenced in June, 1939)

| YEAR | Quantity of 37° API Oil | | Quantity of 38° API Oil | | Quantity of 39° API Oil | | Total Barrels Produced |
|---|---|---|---|---|---|---|---|
| | Barrels | Percent | Barrels | Percent | Barrels | Percent | |
| 1938 | 14,875 | 9.4 | 144,047 | 90.6 | ..... | .... | 158,922 |
| 1939 | 10,822 | 7.9 | 126,817 | 92.0 | 204 | 0.1 | 137,843 |
| 1940 | 9,707 | 6.1 | 84,332 | 53.2 | 64,206 | 40.5 | 158,658 |
| 1941 | 12,282 | 6.3 | 96,097 | 49.1 | 87,036 | 44.5 | 195,627 |

remainder graded as 37° API. Little change in the gravity was apparent in 1939, but in 1940 only 53.2 percent of the production was graded as 38° API and only 6.1 percent fell in the 37° API bracket. The remaining 40.5 percent of production had climbed into the 39° API bracket during that year, represented by 64,206 barrels. An additional increase was noted in 1941, when 44.5 percent of the production, which due to a gain in recovered volume amounted to 87,036 barrels, was graded as 39° API gravity. Table 1 shows the quantity and percentage of various gravity oils produced annually for the years 1938 to 1941 inclusive. Naturally, this increase in gravity has brought higher prices per barrel, which coupled with enlarged production has made the gas-injection project more profitable.

**TABLE 2**

**Gas Production and Gasoline Recovery Trend**

(All Figures for Month of June in Given Year. Gas Injection Commenced in June, 1939)

| YEAR | Cubic Feet of Gas Produced | GALLONS OF GASOLINE RECOVERED | |
|---|---|---|---|
| | | Total | Per Thousand |
| 1934 | 16,810,000 | 114,302 | 6.80 |
| 1935 | 14,351,000 | 88,056 | 6.14 |
| 1936 | 11,717,000 | 75,626 | 6.45 |
| 1937 | 10,336,000 | 69,126 | 6.69 |
| 1938 | 6,640,000 | 46,039 | 6.93 |
| 1939 | 8,345,000 | 57,049 | 6.84 |
| 1940 | 27,290,000 | 157,007 | 5.33 |
| 1941 | 43,881,000 | 184,231 | 4.20 |
| 1942 | 52,539,000 | 178,060 | 3.39 |

The increase in volume of gas produced is presented in Table 2 by comparing the month of June for the years 1934 to 1942 inclusive. The quantity of gas produced showed marked increase beginning with 1940, the first full year for the properties to be under the gas-injection program. While the quantity of gasoline recovery per thousand feet of gas has declined, as to be expected, the increase in volume of gas produced has resulted in larger gasoline production in recent years.

### Cleaning Out Beneficial

The effect upon production by cleaning out of producing wells through 1940 and 1941 can be observed from data shown in Table 3, which lists 26 such operations. This is only a partial list of wells cleaned out.

The principal reason for cleaning out many of the producing wells was to lower the pumping level to the bottom of the shot-hole. The other, and perhaps more important reason, was to clean the bore-hole face so oil might flow more readily from the surrounding reservoir into the well. It will be noted that most of the wells have responded beneficially to clean-out operations, although in varying degrees. Some of the wells responded quickly to a simple washing operation, which appears effective in removing the usual gums and sand-face accumulation of caked oil and other foreign matter in the East Burbank Extension area.

The effect of the gas drive on pumping time shows a substantial decrease in the number of hours required to obtain the oil, there being a substantial increase in barrels pumped per hour. The quantity of oil pumped from the producing wells was almost doubled between May, 1939, and December, 1941. Consequently, fewer pumping hours were required despite the increase in overall production. An analysis of the data in Table 4 shows that (1) the pumping time required to service the

**TABLE 3**

**Effect on Production of Cleaning Out Operations**

| DATE | Well | BARRELS OF DAILY PRODUCTION | | |
|---|---|---|---|---|
| | | Before Cleaning | After Cleaning | Increase |
| 1940 | 8 wells | 37.63 | 65.00 | 27.37 |
| 1941: | | | | |
| January | Hiram 7 | 16.00 | 19.50 | 3.50 |
| February | Hiram 9 | 6.50 | 11.25 | 4 75 |
| February | Hiram 2 | 1.25 | 1.25 | 0.00 |
| February | Roach 5 | 5.00 | 6.00 | 1.00 |
| February | Rosch 7 | 4.37 | 5.00 | 0.63 |
| May | Hiram 6 | 3.13 | 3.13 | 0.00 |
| May | Gale 4 | 9.83 | 11.67 | 1.84 |
| May | Gale 5 | 7.00 | 8.75 | 1.75 |
| June | Gale 9 | 8.92 | 10.25 | 1.33 |
| June | Gale 11 | 8.17 | 8.17 | 0.00 |
| June | Gale 12 | 5.83 | 9.33 | 3.50 |
| June | Gale 13 | 5.14 | 5.83 | 0.69 |
| July | Gale 1 | 2.04 | 3.50 | 1.46 |
| July | Gale 3 | 0.29 | 0.50 | 0.21 |
| July | Barber 3 | 2.50 | 2.50 | 0.00 |
| July | Barber 5 | 4.38 | 5.25 | 0.87 |
| August | Bigheart 10 | 15.00 | 15.00 | 0.00 |
| August | Reed 1 | 15.00 | 18.00 | 3.00 |
| Total | 26 wells | 157.98 | 209.88 | 51.90 |

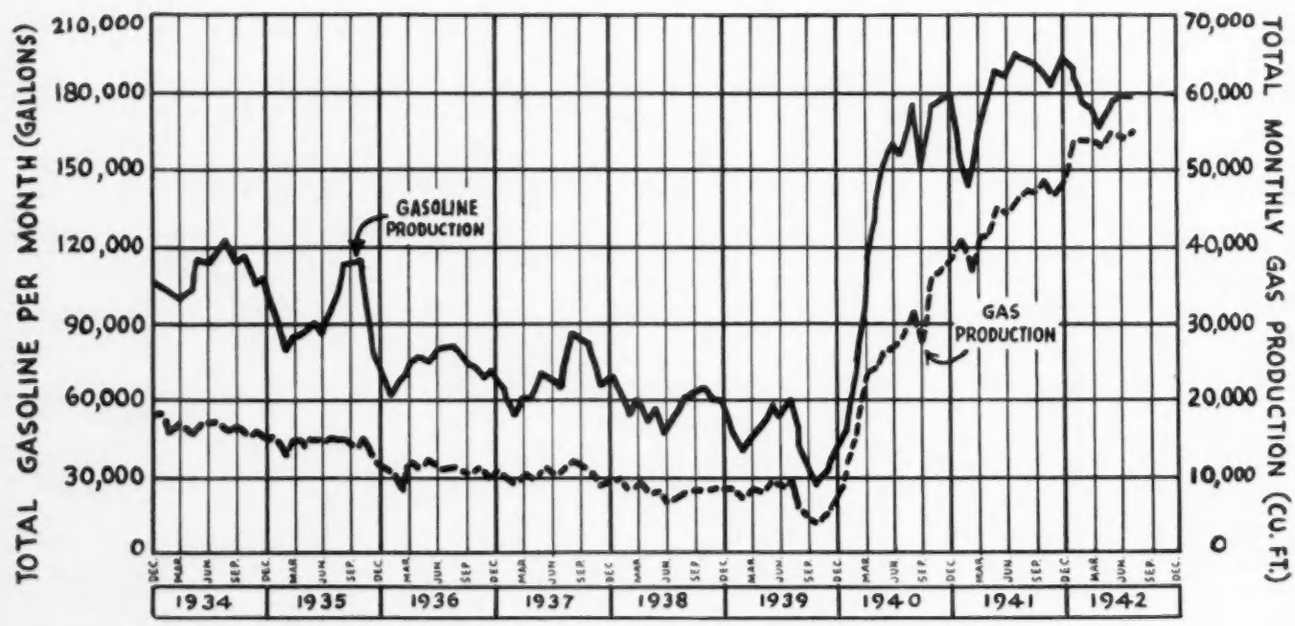



**FIGURE 2**

**Gas and gasoline production record for all repressured leases in the Stanley Stringer, or East Burbank Extension, field. A marked increase followed commencement of gas injection into the producing formation, as evidenced by the curves since the beginning of 1940.**

**TABLE 4**
**Effect of Gas Injection on Pumping Time and Recovery Rate**

| LEASE | DAILY AVERAGE IN MAY, 1939 | | | DAILY AVERAGE IN DECEMBER, 1941 | | |
|---|---|---|---|---|---|---|
| | Hours Pumped | Barrels Daily | Barrels Hourly | Hours Pumped | Barrels Daily | Barrels Hourly |
| Barber | 22.00 | 21.31 | 0.97 | 18.75 | 31.95 | 1.70 |
| Bigheart | 48.50 | 54.10 | 1.12 | 42.50 | 83.65 | 1.96 |
| Frank | 35.25 | 15.64 | 0.44 | 28.25 | 35.85 | 1.27 |
| Gale | 84.50 | 76.11 | 0.90 | 40.25 | 66.97 | 1.66 |
| Hiram | 70.50 | 75.86 | 1.08 | 47.25 | 82.98 | 1.75 |
| Roach | 89.00 | 92.67 | 1.04 | 57.50 | 124.20 | 2.16 |
| Wilfred | 115.00 | 91.92 | 0.80 | 79.25 | 147.59 | 1.86 |
| Totals | 464.75 | 427.61 | 0.92 | 314.00 | 573.19 | 1.83 |

several leases was reduced an average of 150.75 hours per day; (2) the production from the leases increased an average of 145.58 barrels per day, and (3) the barrels pumped per hour increased from .91 to 1.83, or 100 percent.

These increases have been gained without changing the length of stroke, or the number of strokes per minute at any of the wells. The advantages accredited to this reduction in pumping time has been in the saving of fuel, the reduced work required to operate the equipment, and less wear on the equipment. The latter two items are important today, in view of the scarcity of manpower and equipment. It is estimated the saving in fuel alone amounts to 53,000 cubic feet of gas per day, which can be used as return gas.

Not all the individual properties respond to the gas drive in the same manner, some being on more favorable locations in respect to the thickness and continuity of the sand than others. The Bigheart lease, for example, declined from a daily production of 82 barrels per day in 1934, as illustrated by Figure 3, to 53 barrels per day in 1938, a total decline of 29 barrels, or 35 percent in a 4-year period. Removal of the vacuum and the effect of the state-wide shutdown affected this lease severely, showing a continued decline in production until it averaged only 37 barrels per day in January of 1940. Injection of gas was started on this property on October 12, 1939, beginning with a daily average of 22,000 cubic feet, which was increased to 111,000 cubic feet in December, 1940. Response to this increase of injection volume was almost phenomenal.

Since the Bigheart lease indicated that its production of oil depended largely upon the quantity of injection gas, the volume was increased from a daily amount of 111,000 cubic feet in December, 1940, to a daily average of 219,000 cubic feet in June, 1942. Instead of following the normal expectancy curve, which indicated that it should produce only 37.96 barrels per day in July, 1942, this lease had climbed to 105 barrels per day, more than 176 percent over the expectancy. The sensitiveness of this lease to injection gas is shown in the production curve. For each variation in volume to the input wells, there is an immediate and notice-

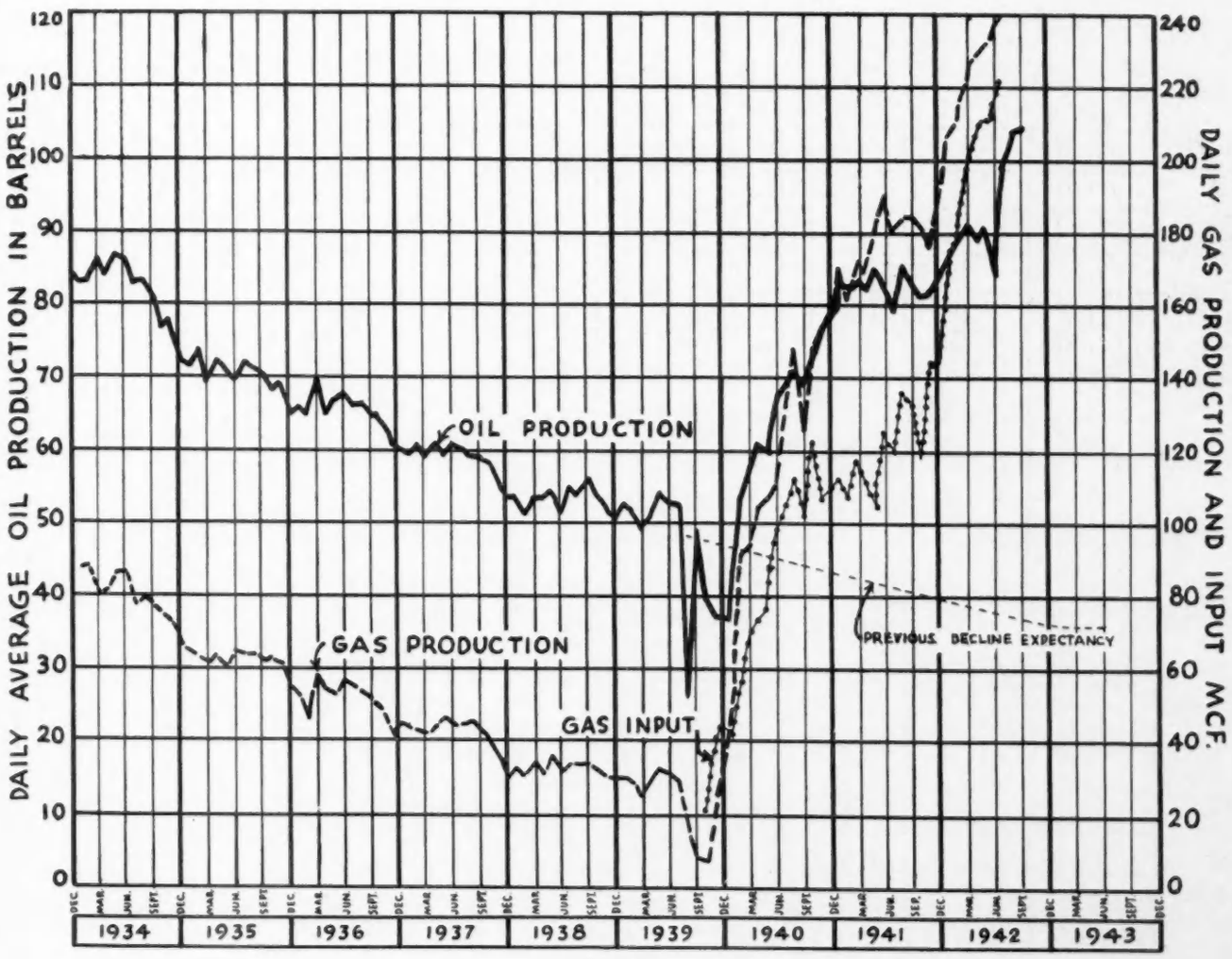



**FIGURE 3**
**Production and injection record of Bigheart lease, which shows a marked response to gas injection volumes. Consequently, its production has risen far above the level expected under conditions previous to gas injection.**

able variation in the production of both oil and gas.

The Gale-O'Dell lease, on the other hand, has responded with less profit to the project than any other property. When it refused to respond shortly after gas was started into the key well, it was assumed that the lower part of the key well shot hole was filled with cavings, or the upper part of the sand was acting as a thief zone. A clean-out operation removed what little sediment, sand and debris was in the hole and the face of the sand was cleaned by thorough washing. The response has never been more than a few barrels of oil, regardless of the quantity of injection gas introduced through the key well, and the decline follows the normal expectancy as set up in the original study. Gas production follows more closely the injection volume than any of the remaining properties.

### Water Mist Injection

Remedial measures are being applied to this lease in the form of injected water mist along with input gas. It is hoped that this will create an artificial Jamin effect in the thief section of the sand, and thereby divert the injected gas to the zone where the oil now lies dormant. A simple apparatus arrangement has been designed to inject the water mist along with the gas. A nearby surface tank is used as a water reservoir. It is connected by pipe line to a small vertical container beside the casinghead, which is filled as often as required for water to be introduced into the injected gas by means of a pipe extending into the inside of the casing. The latter pipe terminates with a specially designed nozzle that atomizes the water into a fine mist. It is hoped that this water mist, which contains no droplets, will be carried with the injection gas into the formation, and be deposited and held by surface tension until sufficient resistance is built up in the thief section to cause the gas to be diverted to the lower zone containing oil. The experiment is still in the initial stage of operation, but injection pressures have risen perceptibly, indicating that some effect has been obtained in blocking off the more permeable section of sand. The intention is not to introduce water that will merely pour into the bottom of the hole, but to inject water so finely broken that it will be carried as a cloud of vapor with the gas back into the formation.

### Conclusions

Several interesting conclusions may be drawn from a study of this gas-injection program. It is apparent that the project is not a repressuring operation, but something resembling recycling, the success of which depends almost entirely upon the sweeping action of the injection gas passing through the sand body to drive the oil from the pore spaces to the well. This is substantiated by the fact that when the volume of gas injected declines, even for a single day, a similar drop is quite noticeable in the production of both gas and oil the following day.

The entire property has shown a gratifying increase in (1) oil production, (2) gravity of oil produced, and (3) production of natural gasoline. As the decline curves show, the properties under a normal-expectancy decline curve should have produced only 315.58 barrels of oil per day in July, 1942, if operated under conditions existing before gas injection was started. Instead the producing wells pumped an average of 599.38 barrels per day, an increase of 283.80 barrels, or 90 percent. Pumping time has been reduced materially, reducing fuel cost and wear on equipment. Indications at this time point to an increase of 1,500,000 barrels in ultimate recovery of oil above the normal expectancy, all of which can be credited to the gas drive.

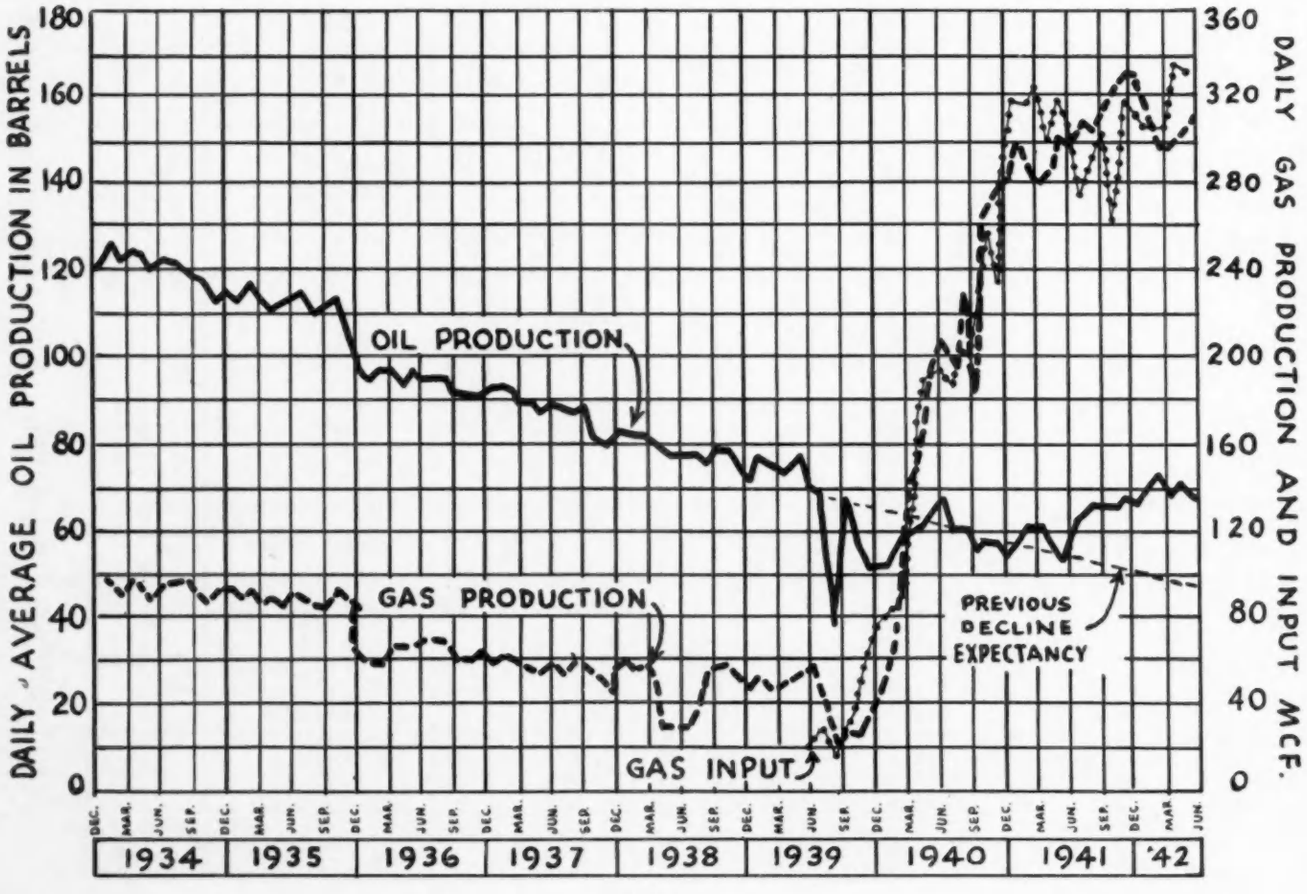



**FIGURE 4**

**Production and injection record of Gale-O'Dell lease, which has failed to respond to gas injection. Consequently, its production has failed to increase materially above the decline expectancy curve under conditions previous to gas injection.**

# Radioactivity Determinations Set Production Delimitations

By R. A. STOTHART
Radioactive Surveys Company, Houston

THE precise determination of radioactivity at the earth's surface, at one time considered another of the more promising new methods of locating possible oil reserves, now is generally condemned as an exploratory means by geophysicists on account of the practical inability of operators to differentiate between radon emanations from uncharted oil deposits and those from certain types of deeply buried minerals. The determination of degrees of Radioactivity has, however, been perfected to the point where it becomes a method for clearly determining limits of productive drilling once a single bore-hole has reached producing sands and the radioactive characteristic of the locality have been determined.

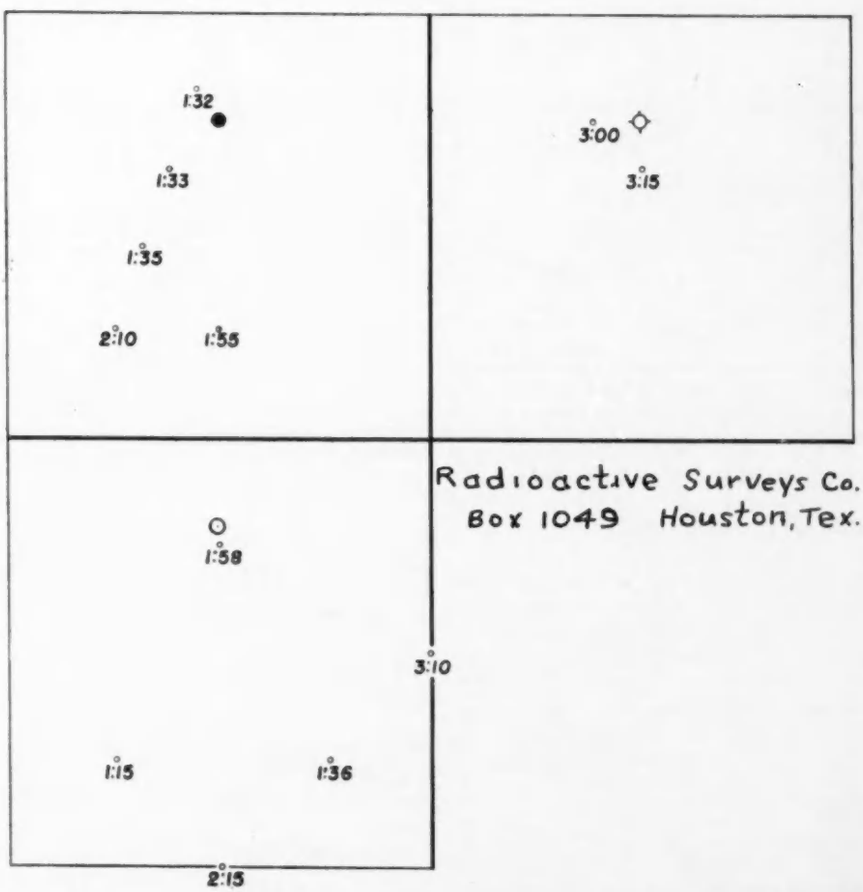
As applied to all geophysical exploration, the measurement of radioactivity deals with the location of underground radon sources through surface measurement of the manifestations, the interpretation of such data with reference to their bearing on possible oil structures being one in which the experience and skill of the operator rank equally with the sensitivity of the instrument as of prime importance. Emanations from each locality and each material in that locality vary with the radio-activity of each factor, the measurement being an overall or summation figure of the value at the station point. The shading in the variations are being made increasingly more readily appreciated as instruments and technique develop in the light of past and accumulated experience.

Crude oil, an organic material, possesses a relatively large capacity for absorbing radioactive emanations. Though not itself a solvent or carrier of radioactive materials, and although no radium compound has ever yet been discovered in or isolated from crude oil, many crude petroleums when first taken from the well show marked radioactivity, in varying degrees of intensity.

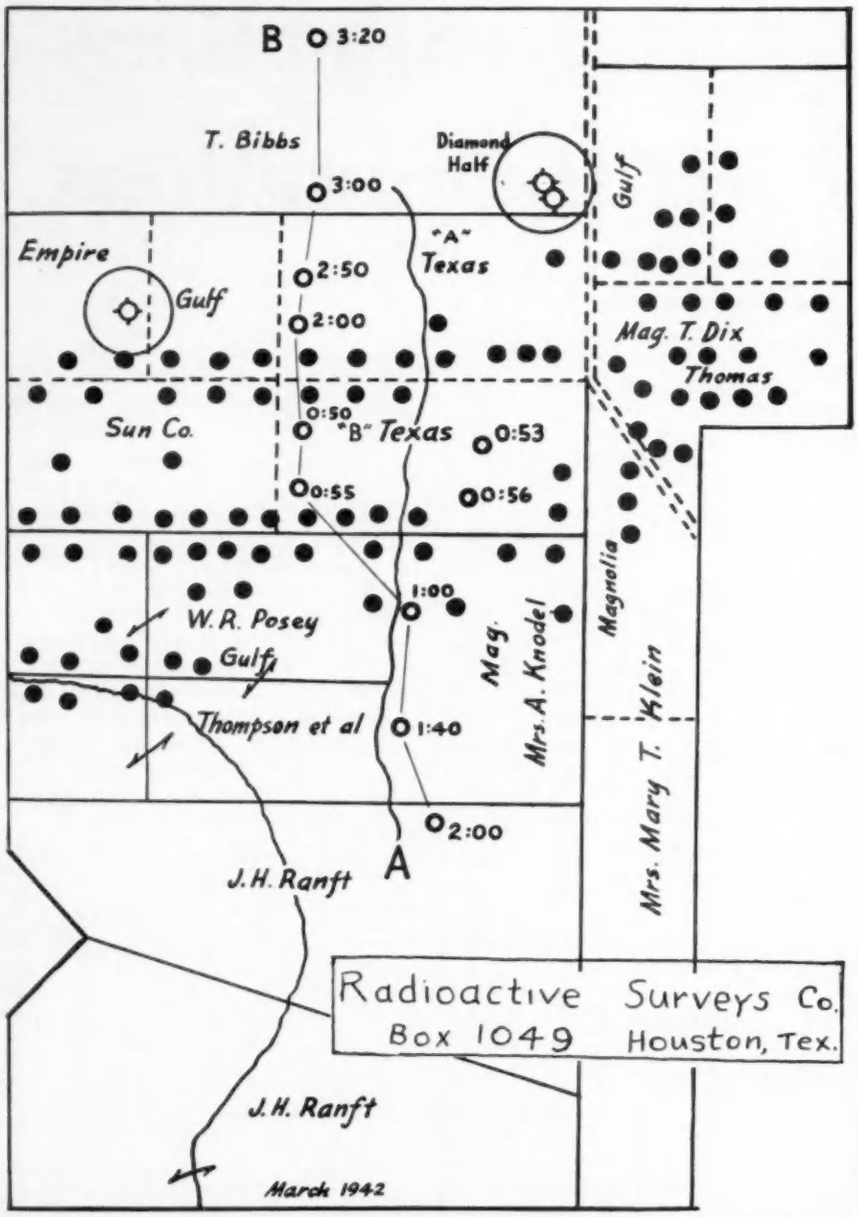
Since these same crude sources, after a period of storage, test progressively lower in radon, and eventually show negative results[1], it is readily apparent that the emanations initially observable are the result of absorption during the period of underground accumulation and storage of the crudes, and are not the product of radioactive salts in solution within the petroleum itself.

Oil absorbs from 40 to 50 times as much radon as does water, in the temperature range of between 20° and 50° Centigrade[2], only highly charged mineral waters, such as the hot sulphur flows which give rise to many of Texas' mineral springs, approaching the radon-absorbing capacity of crude oils. Natural gas, although a hydrocarbon product, does not absorb radon emanations, and thus any adaptation of radioactivity determination can not be relied upon to give indication of extent of gas accumulations.

A series of experiments on various types of formations which either lie close to or actually form oil-bearing strata has been carried out under carefully standardized conditions to show the presence of radium (as one or more of the radioactive salts) in Frio clay




**The Hunton Lime, surveyed in Seminole County, Oklahoma, shows the spotty condition which has made drilling and surface geology so uncertain. Fairly uniform results in the section with the well indicated production to the south; an indication borne out when a well at Station 1:58 made a producer.**



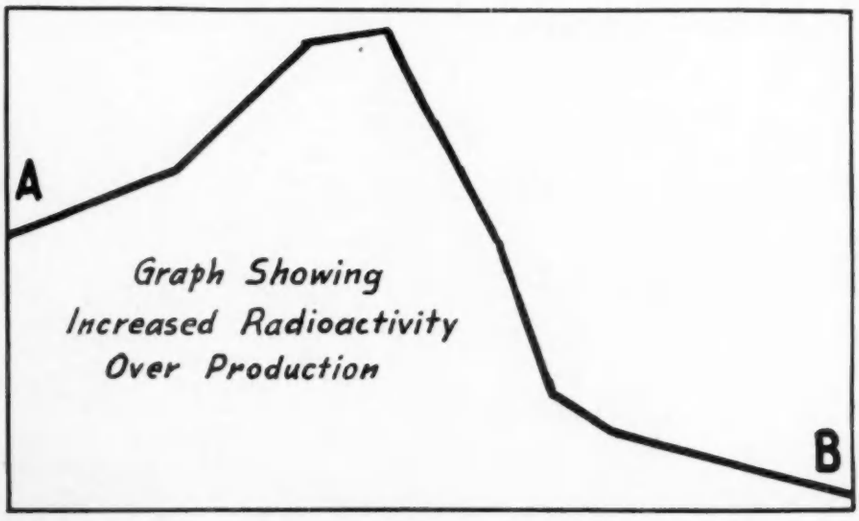

**Portion of Darst Creek field, Joel R. Robinson survey, showing traverse made by radioactive survey and actual drilling of producers through section checked. Offset in line of stations was caused by boggy condition in creek bottom, with stations on both sides portraying similarity of readings laterally.**

shale and quartz sandstones of Oligocene age in the Sun field of Starr County, Texas, in the Navarro Crossing field of Houston County, Texas, where both Woodbine shale and quartz sandstone of Cretaceous age were tested, and in Pennsylvanian sandstone of the Bartlesville formation in Nowata County, Oklahoma. Other rock types tested included limestone, shaly limestone and dolomite, of Ordovician age and from Viola, McLish and Cromwell formations. In each of these rocks, at depths ranging from 494 to 5935 feet, radium was measured, thus setting up contiguous source beds in which emanations might originate, to be absorbed by the oil accumulations later produced from those localities. The same observers[3], likewise made radioactivity determinations on several oil samples collected from the fields from which were obtained the rock samples.

In each check, the radon emanations from the oil were several times that to be expected from the study of the rock alone. Thus the difference in radon, expressed as curies per gram of oil and grams of radium per gram of oil represents the excess or absorbed radon over that in equilibrium with the radium contained in the oil. This excess amount must represent the radon derived from exterior sources. The radon-radium ratio was over 4 in all samples tested, averaging 10.5, and proving conclusively that the radon excess must have come from extraneous sources.

Many surveys and tests during the past few years have been made by checking for radioactive emanations in determining extensions of known oil fields. With the presence of commercial production certified by one or more producing wells, the correlation of readings from radon stations set up across the fault line, or ranging at right angles from the well in other types of production, enable the change in determinations to indicate the most desirable drilling program, as well as to indicate within close limits the actual trend of a fault, graben or other subterranean change which will either terminate or alter producing formations.

The tests for such a determination are made by a small crew, operating




**Time-distance curve of results obtained on survey across line A-B in Darst Creek field. Peak of curve corresponds to area directly between double lines of wells—drilled along property lines—and shows gradual decrease in intensity toward the south, with steep break at fault line.**

the equipment for test-boring and accumulating the samples. The tests are made by boring a 4-inch hole about 3 feet, or to a depth insuring the formation of an adequate shoulder, extending the hole another foot with a 3-inch augur, and setting a special packer at the shoulder so as to seal off the lower section of the hole from above.

The closed portion is then exhausted through a vacuum pump, and the collector at the end of a small hose placed on the bottom of the sampling hole. When the hole has reached a condition of equilibrium, as indicated by a gauge on the suction line, the sample is collected, the packer removed, and the next station sampled in like manner.

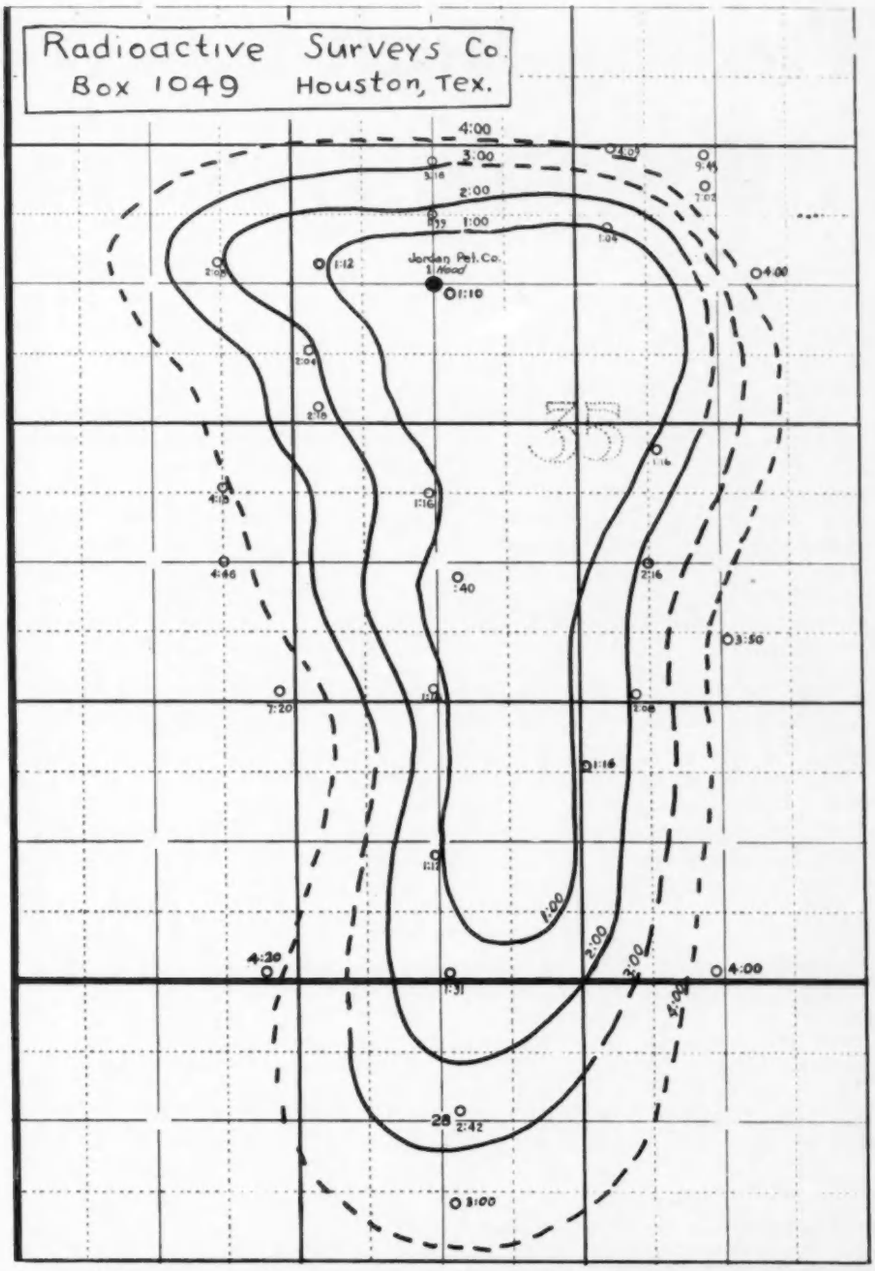
Readings of the emanations collected in this manner are evaluated, oriented and plotted across the field map, and the crest of the curve of emanations determined. It is along this crest that drilling must be carried out to tap the most prolific oil sands and to insure maximum production without excess drilling or the loss of dry holes.

Results of this method in Hunton lime areas of Oklahoma in determining extensions show an accuracy or productivity percentage of 70 or better. The extreme fingering and abrupt changes of productive contours in this lime, known to all who have drilled offsets to good wells in that area, indicate the accuracy of radon measurements to obtain such a high percentage of productivity.

On the Texas Gulf Coast, where producing formation conditions are uniform, the percentages are much higher. In one field, for example, which was contoured by the radon determination method coincidental with the completion of the initial or discovery well, several years of gradual field drilling on the standard pattern were required before the drill had actually proved out the delimitations indicated by the radioactivity survey, on which even the thinning of the productive sands to one side of the field were shown.

Stratigraphic traps such as East Texas are readily defined by extending the stations across the edge of the field in the direction indicated by surface or seismic surveys and evaluating the results obtained so as to plot the line of demarcation between commercial and unproductive sands. Profiles made in the East Texas field were made well up into production and extended past the west edge of the field as already defined by dry holes. The stations in the field were very uniform, and showed a 2:1 increase over stations made only a few hundred feet past limits of proven production.

Much work has also been done by this method in fault-line fields such as Luling, Darst Creek, Cordele and others in the same general area. By contouring the stations made in the production it is relatively simple to establish the oil-fault contact. The radioactive emanations show very little, of any, drift laterally from source base (the crude oil), even from depths of several thousand feet. By the same procedure, extended, the oil-water contact on the down-dip side may be established. In most instances the change in values obtained by the tests also indicates the thinning of the sands and thus permits the elimination of non-commercially profitable drilling.




**Contouring by means of radioactivity surveys defines the limits of probable production around Jordan's No. 1 Hood, Seminole County, Oklahoma. The datum was taken at 1100, with the contour intervals as one minute. The one-minute contour indicates probable average production, with the two-minute contour indicating probable edge wells or dry holes, and areas outside these limits as out of consideration for drilling.**

In view of the present adaptability of the method and the results obtained, it is considered that proper application of known methods of measuring radioactivity where production is established will reduce if not eliminate, the heretofore necessary drilling of dry holes to establish the limits of commercial production.

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[1] C. A. Heiland, "Geophysical Exploration."

[2] D. T. Day, "Handbook of the Petroleum Industry."

[3] K. G. Bell, Clark Goodman, and W. L. Whitehead, "Radioactivity of Sedimentary Rocks and Associated Petroleum," Bulletin of American Association of Petroleum Geologists, Vol. 24, No. 9.

# Closing High-Gas Oil Wells and Allowable Transfer a Success

By FRANK BRIGGS, Staff Writer

IN JUNE, 1942, the Texas Railroad Commission granted operators of the Goldsmith field, Ector County, permission to unitize their leases into 16-well tracts, shutting in as many as 8 wells in each of these units and assigning the allowable of each shut-in well to another well in the unit. The purpose was to conserve the physical energy of the field, and thus tend to obtain greater ultimate recovery. The plan has been remarkably successful, and attests to the advisability of shutting in excess gas and water producers and transferring the allowables to other wells.

The purpose of the unit production plan was to eliminate the excess gas production from wells that were producing with high gas-oil ratios, thus tending to maintain the bottom-hole pressure. By so doing, the field, which previous to the adoption of the unit plan was producing as an incomplete gas-driven structure, was put in the category of an almost completely gas-driven pool and thus greater ultimate recovery is anticipated.

The success of the plan from this angle alone is shown in Table 1. Figures in this table represent the performance of those wells in the field that are connected into the local gasoline plant. They therefore, have been checked in the field and at the intake of the plant. Since June, when the plan was first put into effect, average gas-oil ratio has decreased from 2067 to 1701 cubic feet, which represents a substantial savings in gas energy.

**TABLE 1**

**Goldsmith Oil and Gas Production Rates Under Unit Plan**

(Only wells connected to gasoline plant listed here.)

| MONTH | No. Wells Connected | Total MCF Gas | Total Bbls. Oil | Average Gas-Oil Ratio |
|---|---|---|---|---|
| June, 1942.. | 801 | 870,578 | 421,137 | 2,067 |
| July, 1942.. | 801 | 805,615 | 421,856 | 1,910 |
| August, 1942 | 805 | 978,044 | 527,618 | 1,854 |
| Sept., 1942.. | 805 | 717,404 | 396,201 | 1,811 |
| Oct., 1942.. | 805 | 673,293 | 395,821 | 1,701 |

Figures from the October, 1942, report of Goldsmith Poo Engineering Committee.

The effect of the unit plan upon production is further illustrated by a comparison of results in unitized and non-unitized leases, which is shown in Table 2. This tabulation shows that since shutting in the high gas-oil wells, the average savings in cubic feet of gas per barrel of oil produced has been 642 on unitized leases, whereas non-unitized leases have shown a small increase in gas-oil ratio.

Aside from the conservation measures accomplished, which the operators estimate will enable them to make a 50-percent recovery of oil contained in the reservoir instead of the 25 percent previously expected, there are other aspects that are proving beneficial and economical. One of the most important at this time is the saving in automobile wear and fuel, for the lease men have less wells to attend and consequently less distance to travel. The manpower situation also is benefited, fewer men being required to perform lease operations. Production costs from all items should be reduced. Lastly, the high costs of uncertain remedial work, a rather common procedure at Goldsmith in the past to improve gas-oil ratios in bad wells, is practically eliminated.

The Goldsmith field was first explored by Landreth Production Corporation which brought in a prolific wet-gas well in Scharbauer 1. Gulf Oil Corporation brought in the first oil strike when it completed Goldsmith 1 on June 14, 1935. The producing formation is in the Permian at a depth ranging from 4060 to 4300 feet. On a proven tract of 24,300 acres, there are 973 oil and 2 gas wells producing a daily allowable of 27,656 barrels of oil.

**TABLE 2**

**Unitized Leases vs. Non-Unitized Leases in Goldsmith Field**

| MONTH | Total Wells | Shut-In Wells | Average Gas-Oil Ratio | Average Change in Gas-Oil Ratio | Percent Change |
|---|---|---|---|---|---|
| **Unitized Leases:** | | | | | |
| June, 1942 | 864 | 0 | 2,116 | | |
| October, 1942 | 648 | 216 | 1,654 | —462 | —21.83 |
| **Non-Unitized Leases:** | | | | | |
| June, 1942 | 157 | 0 | 1,867 | | |
| October, 1942 | 157 | 0 | 1,950 | + 83 | +4.45 |

### Goldsmith Engineering Committee

The operating policies, governing the conduct of producing methods and practices not controlled by the commission, are determined and enforced by a committee composed of representatives from the operating companies. This body, known as the Goldsmith Pool Engineering Committee, is headed by a chief engineer, a paid professional engineer, who constantly works for the improvement of operating practices in the field.

In 1940, the committee—representing the operators — realized that conservation measures which would prolong the life of the field and increase the potential recovery, should be adopted. Consequently, a program designed to operate so that these conservation goals might be reached, was drawn up and the rules for operation were submitted to the Texas Railroad Commission for approval. These early rules, as presented before a hearing of the commission on December 17, 1940, and contained in the Oil & Gas Docket No. 126, 8-2114, are as follows:

"In order to reduce physical waste in the Goldsmith field, the rules and regulations shall be amended to allow the establishment of production units for the purpose of unitizing tracts or leases in the field. A production unit is defined as any group of wells producing into a common tank battery where the allowable production of all the wells on the unit can be produced from not less than one half of the wells in the unit that are produced with the lowest gas-oil ratios.

"Production units shall not be established to exceed 160 acres in area. The units shall be rectangular in shape; the length of the unit shall not exceed twice the width of the unit; provided, however, that any group of wells produc-

ing into a common tank battery on December 1, 1940, can be designated a production unit, the total number of wells producing into any common tank battery not now exceeding 16 wells, the allowable oil of any well to not be transferred more than 2310 feet.

"To establish a production unit, the operator shall file with the commission a plat showing the wells on the production unit and designating the wells from which the unit's allowable will be produced and the wells which will not be produced.

"Each designated producing well on a unit shall be allowed to produce a proportion of the sum of the calculated allowables of all the wells on the unit that the calculated allowable of the individual producing well bears to the sum of the calculated allowables of all the designated producing wells on the unit.

"Each production unit shall be equipped to measure the amount of oil and gas produced from the unit separately from any other unit. The monthly oil production from any unit shall be reported on the regular monthly E. B. reports, the monthly gas volumes to be reported on the monthly EH-4 and 3-266A forms.

"Two-day production tests shall be made and reported on GO No. 2 forms on each well in a unit during the field-wide gas-oil ratio surveys required by the commission with the following restrictions:

"1. The wells designated as producing wells on any production unit shall be tested for two days at or above the wells' assigned share of production unit's allowable as shown on the current proration schedule, the tests to be reported on GO-2 forms.

"2. The wells designated as shut-in wells shall be tested for two days at or above the calculated allowable production for that well, the tests to be reported on GO-2 forms. The oil production from the testing of these designated shut-in wells shall be deducted from the allowable of the designated producing wells currently to balance the production units' allowable and monthly production.

"An offset operator shall be allowed to approve the gas-oil ratio tests. Any operator in the field may witness the gas-oil ratio tests on any operator's property."

Rule No. 6 in the field rules covering the Goldsmith field shall be amended to read: "Any well or production unit producing with a gas-oil ratio in excess of 5,000 cubic feet per barrel of oil produced shall be allowed to produce daily only that volume of gas obtained by multiplying the well or production unit's daily allowable as determined by field rules by 5,000 cubic feet."

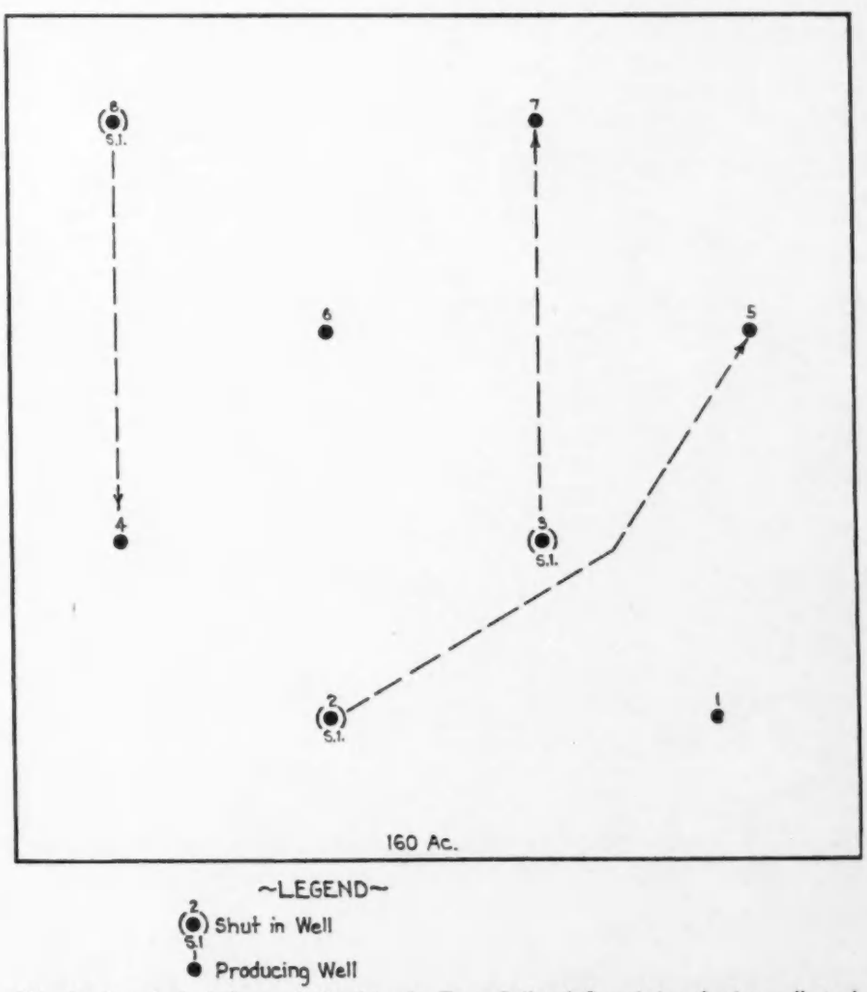
During a period of almost two years, the proposed operating rules for Goldsmith were revised and re-submitted to the commission at a hearing in April 1942. These later proposed rules were as follows:

"The various proration units on each lease in the Goldsmith field, as defined by Rules 1 and 3 hereof, can be combined into production units which total not more than 320 acres and contain not more than 16 wells or proration units. Any operator may designate as many as one half of the wells on any production unit as non-producing wells, the remainder of the wells being designated as producing wells, provided, however, that no producing well shall have a higher operating gas-oil ratio than a non-producing well on the same production unit. The allowables for the non-producing wells, as calculated by Rules 1 and 3, shall be distributed among the producing wells on the production unit in the proportion that the allowable of each such producing well, as calculated by Rules 1 and 3, bears to the sum of the allowables of all the producing wells on the production unit. It is provided, however, that if the effect of such distribution of the calculated allowables of non-producing wells results in giving an allowable to a well greater than its producing capacity, the allowable for the non-producing wells on the production unit shall be distributed among the remaining producing wells on the unit.

"Each operator in the Goldsmith field shall file with the commission a plat drawn to scale showing each production unit, the wells to be designated as non-producing wells on such unit, the wells to be designated as producing wells on such unit, and the number by which such production units will be identified.

"The volume of oil produced from each production unit shall be measured in tanks or by meters separately from the oil produced on any other production unit and reported monthly to the commission. The volume of gas produced on any production unit shall be measured separately from the gas produced on any other production unit and reported monthly to the commission.

"Two-day tests shall be made on each




**This plat is typical of those submitted to the Texas Railroad Commission showing wells to be shut in and wells to be assigned the allowables of the shut-in wells.**

**1. FIRST TRAINLOAD** of 24-inch seamless steel pipe left a plant of NATIONAL Tube Company July 10, 1942. This represented approximately one day's production for this line, as per schedule. The whole 550 miles of pipe was completed on November 10, 1942—an average of a trainload a day.

**2. STRINGING** Pipe for all seven crews was delivered to the right places, at the right time. Work marched along at a fast rate without hold-ups because there was no lack of pipe.

# Pipe for First Unit "Big-inch" line completed

# On time!

**"BIG INCH"**, pipeliner's name for the new War Emergency Pipe Line, runs from Longview, Texas north for 550 miles past peaceful cabins, through dense woods, under railroads and rivers on to Norris City, Illinois. From there it will be extended to Philadelphia and New York. This is the world's largest capacity oil line.

UNITED STATES STEEL

**3. BENDING** Both the hot and cold methods of bending the 24-inch pipe proved successful. In each instance a tractor holds a bending block firmly at the point where the bend is desired and a second tractor pulls the end of the pipe to obtain the correct curvature.

**4. TACK WELDING** another joint in the line. Re ords were made for layi 24-inch pipe; as many as 8 miles were laid by the contracte on certain days.

# 550 miles of 24-inch seamless pipe for first unit finished exactly on schedule

DRIVING across the middle west at record-breaking speed to complete the first unit of the world's biggest oil line, pipe line crews can be justly proud of a remarkable accomplishment. Texas oil will soon be flowing into Norris City, Illinois at an expected rate of 300,000 barrels a day.

This means that tank-cars can now move east from this point, instead of Texas, and save 550 miles haulage. The railroads will be able to deliver approximately 50% more oil in a given period of time. When the entire line is completed to New York and Philadelphia, it will deliver as much oil as would be handled by a fleet of 150 tankers of 10,000 deadweight tons each in Gulf Coast to East Coast movement under existing conditions.

Fortunately, NATIONAL Tube Company had foreseen, some years ago, need for 24-inch seamless steel pipe. When the emergency came, our mills were ready—the only ones in America big enough and fast enough to handle the job. Pipe flowed from our plants at the rate of a trainload a day. Four months after the mills started to roll, every foot of the 550 miles of pipe had been finished.

But it takes more than big machines to maintain such production speed. It takes sweat, loyalty, and fighting spirit of men. From the blast furnace crews to the piercing mill gangs . . . from the testing machines to the shipping department, every man was determined to make the schedule—and they did!

But this is not all. Pipe for the second unit of the line is now being manufactured. Our mills never stopped rolling between completion of pipe for the first unit and the start of production for the second.

Here is the biggest pipe line job ever tackled—and it is being rushed to completion in a typical American way. Skill, facilities and determination of every ditch digger, welder, pipe maker and engineer are coordinated in one grand effort to complete the whole project on time.

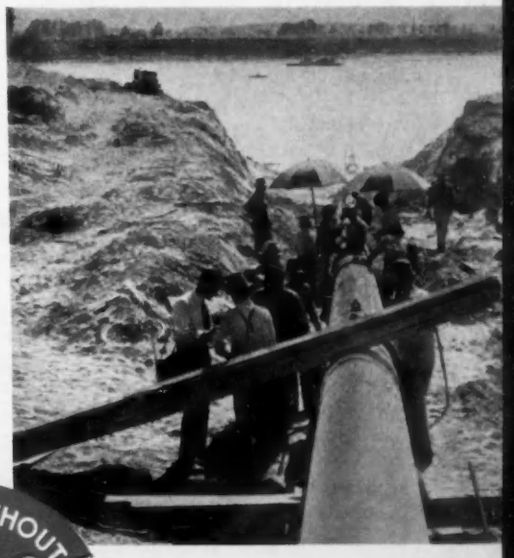
**NATIONAL TUBE COMPANY**

PITTSBURGH, PA.

United States Steel Export Company, New York

**5. READY FOR COATING AND DITCHI** with all bending and welding completed. Experience in field showed that even such large pipe was well suited customary construction procedures.

**6. RIVER CROSSINGS** were generally made tractors pulling pipe the river as each joint was welded on. Line was floated u ready to lower. Dredges then sucked sand from beneath pipe and allowed it to settle 4 to 5 feet below the river's



NATIONAL SEAMLESS

WALLS WITHOUT WELDS

well on each unit in the field during the periodic gas-oil ratio surveys required by the commission as follows:

"(1) Each well designated as a producing well on any production unit shall be tested for two days at a rate not less than such well's total allowable, and not to exceed 10 percent more than the well's allowable as shown on the current proration schedule.

"(2) Each well designated as a shut-in well shall be tested for two days at a rate not less than the allowable for that well, as calculated by Rules 1 and 3, and not more than 10 percent more than said well's allowable as calculated by Rules 1 and 3.

"The railroad commission district office in charge of the West Texas District shall be notified at least 24 hours prior to the time that any gas-oil ratio test is made. All gas-oil ratio tests shall be approved by the offset operator. Any operator in the field, or his representative, or member of the Goldsmith Engineering Committee may witness the gas-oil ratio tests of any other operator's property."

Rule 6 to be amended to read as follows:

"No oil well or production unit producing with a gas-oil ratio in excess of 5,000 cubic feet of gas per barrel of oil shall be allowed to produce daily more than that volume of gas obtained by multiplying its oil allowable, as determined by Rules 1 and 3 of the field rules governing the Goldsmith field, by 5,000 cubic feet. The gas volumes thus obtained shall be known as the gas limit for such well or unit. The daily oil allowable of such well or unit shall then be determined and assigned by dividing its daily gas limit by its producing gas-oil ratio in cubic feet per barrel of oil produced."

### Railroad Commission Ruling

Finally in June, 1942, the commission granted a change in the operating rules for Goldsmith to read as follows:

"Rule 6, as amended by order effective June 10, 1942:

"(a) Any oil well producing with a ratio in excess of 5,000 cubic feet of gas per barrel of oil, shall be allowed to produce daily only that volume of gas obtained by multiplying its daily oil allowable by 5000. The daily oil allowable of such wells shall then be determined by dividing its daily gas limit by its producing gas-oil ratio in cubic feet per barrel of oil produced.

"(b) Any operator may combine the proration units comprising any lease in said field into production units of contigious acreage not more than 320 acres that contain not more than 16 wells each and produce and operate wells on said production unit as follows:

("1) Not to exceed one half of all wells on any production unit, may at the election of the operator, be closed in and the allowable of such closed-in wells after being determined by Rules 3, 5 and 6, may be assigned, with commission approval, to any other well or wells on the same production unit that are producing with a lower gas-oil than the closed-in well. No well may be assigned a greater amount of the shut-in allowable than the equivalent allowable for said well before transfer of any part of shut-in well allowable to it.

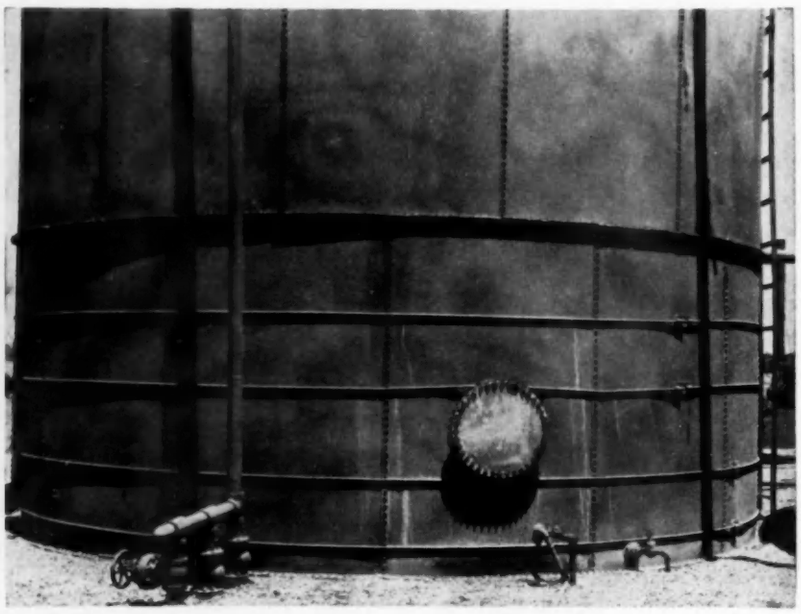
"(2) Before allowables of cosed in wells may be produced from any other well, the operator must file a plat with the commission showing the location of all wells on the production unit and designating those to be shut in."

This excerpt from the commission rules governing the Goldsmith field clearly outline the unit plan of production. There are also rules requiring that tests for production and that bottom-hole-pressure surveys be made periodically following the engineering committee's recommendations on this matter.


### Acknowledgment

In preparing this article, E. A. Wahlstrom, chief engineer for the Goldsmith Engineering Committee during the time of the inception of the unit plan, as well as the operators represented by the committee, gave valauble assistance —for which the writer is very grateful.


**MAINTENANCE HINT**



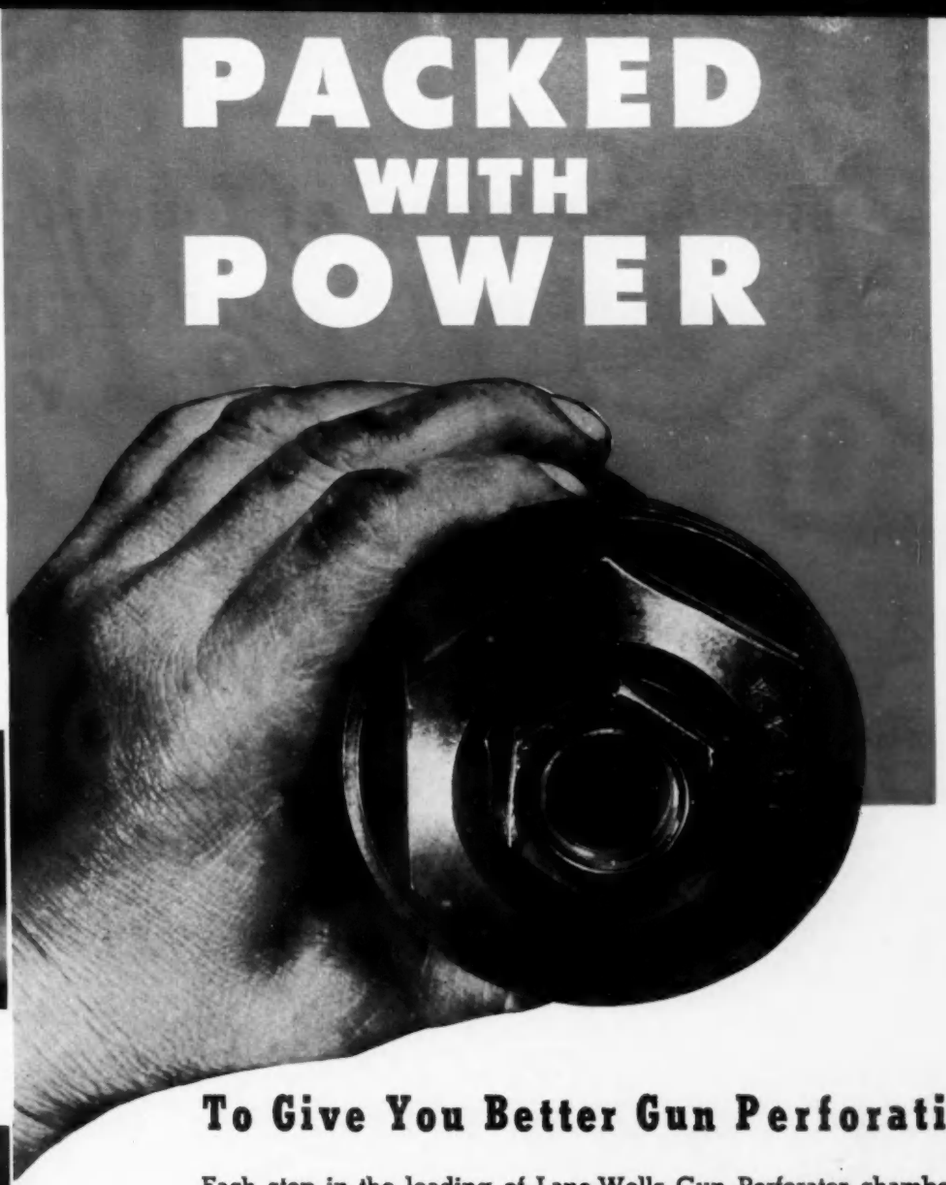
## Reinforcement Makes Bulging Tank Serviceable

SHORTAGES of materials brought on by the war result in many make-shift arrangements, and field tanks are no exception. Many tanks are being salvaged to be later assigned to field services which would ordinarily have called for those of much heavier construction. By using temporary reinforcing measures, however, they will give satisfactory service.

Typical of these temporary arrangements is a 1500-barrel tank which one company set up for storage of hot oil taken off the field dehydration system. Realizing the possibility of the tank buckling or collapsing in the lower staves due to a tendency for the tank to bulge in that area, the superintendent of the lease made up and installed a series of reinforcing rings.

Made of discarded sucker rods (with boxes and pins removed) welded end-to-end, each ring was brought together at a shop-made coupling. The latter is a flat piece of ½-inch steel with one end of the ring welded in place on the one end, and a nut take-up arrangement on the other threaded end of the rod. Four of these rings were evenly spaced around the lower section of the tank, and the improvised reinforcing has given excellent service.

# PACKED WITH POWER



The compressed-powder cartridge fills the powder chamber with uniformly packed smokeless powder. There is no vacant space to reduce powder impact.

The bullet and shear disc confine the cartridge in the leak-proof chamber to build greater pressure directly behind the bullet.

The barrel fits around the bullet and fills the front of the chamber. Power of the expanding gases is exerted directly on the mass of the bullet.

The end of the barrel is sealed against fluid and gas to keep the powder dry and at maximum penetrating efficiency under all well conditions.

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# The Application of Build-Up Pressures To Calculating Capacity and Reservoir Pressure for Gas Well

By EMORY N. KEMLER
Professor of Mechanical Engineering, Purdue University

A PREVIOUS article (THE OIL WEEKLY, 1942) discussed in detail a method of using build-up pressures taken over a short period of time to determine reservoir pressure and the capacity of an oil well to produce[2]. The method and formulas given apply only to oil wells. For gas wells it is possible to derive expressions that can be used to determine the reservoir pressure from data taken over a short period. The method can also be used to give an idea as to the capacity of the well to produce.

Such methods are particularly adaptable to wells of relatively low permeability or productivity-index factor. When the permeability is low the time required to reach full reservoir pressure may involve many days and in some extreme cases may require a month or more to reach the true equilibrium condition. For such cases it is obvious that a means of determining the reservoir pressure from data taken over a short period would be very helpful.

The use of the open-flow method of determining well capacity has the disadvantage of wasting gas. Open-flow tests for establishing actual well producing capacity under various conditions are not very reliable, particularly in wells of relatively low permeability. The capacities as determined from such tests will probably be high because steady-state conditions have not been established. Open-flow tests and tests at high rates may be dangerous from the standpoint of its effect on the subsurface behavior of the well.

The back-pressure method whereby the bottom-hole pressure is measured or calculated from production data and used as a basis for determining the capacity at various pressure conditions has many advantages over the open-flow method. This method is to plot $(P_m^2-P^2)$ against production rate Q on log-log paper, $P_m$ in this equation is the reservoir or build-up pressure and P is the bottom-hole pressure when the well is producing at rate Q. Figure 1 shows such a plot for a well[1]. The only disadvantage which this method has is that several test points must be taken to give a good curve. If the curve is to be reliable the well must be operated at each test condition for sufficient time to establish uniform conditions. In many tests for capacity this important condition is not realized and when it is not observed, incorrect and misleading data will be obtained.

In addition to build-up or reservoir pressure it is possible to obtain an index of the well capacity from build-up-pressure data. This method requires that bottom-hole or fluid-level data be obtained in oil wells. In gas wells the bottom-hole pressure or its value as calculated from top-hole pressure is necessary. The advantage of this method is that information applicable to general reservoir problems can be obtained at one time and over a short period. The method requires that the well be produced at or near some uniform rate for sufficient time to reach steady conditions. The length of time required for this condition to be met may vary from a fraction of an hour for wells of high productive rates to several days for wells of low permeability. The build-up pressure should be taken over a considerable period but need not be so long as the time to reach steady-state conditions. The only disadvantage of the method is that it requires that the well be shut in for a time.

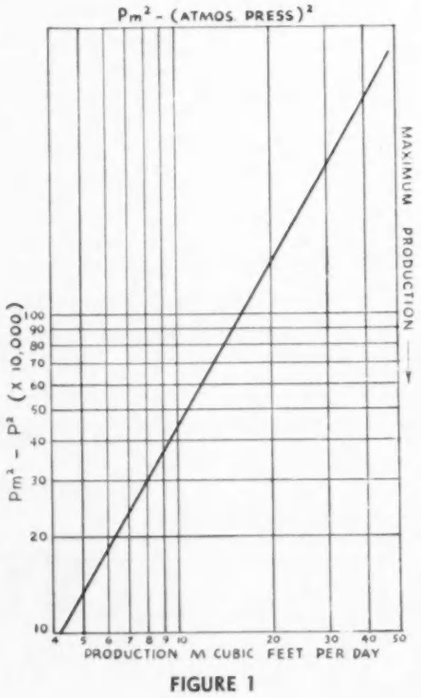


FIGURE 1

The following discussion will cover:

(1) The calculation of reservoir pressure from build-up data.

(2) The calculation of well capacity from build-up data.

**The Calculation of Reservoir Pressure**

The reservoir pressure or pressure in the well at the sand face under equilibrium conditions can be calculated from build-up pressure data using the relation

$$\tanh^{-1}\frac{P}{P_m}=\frac{P_m C t}{V}+\tanh\frac{^{-1}P_1}{P_m} \quad (1)$$

where P is the pressure at any time t.
$P_m$ is the reservoir pressure to be calculated.
$P_1$ is the pressure at the sand face when the well is closed in or at any arbitrary pressure when time is started or when t=0.
V is the net volume of the casing and tubing.
C is the productivity index factor.

The derivation of this method is outlined in the appendix. Figure 2 shows a typical build-up curve for a gas well. As can be seen from equation 1 above, the solution for $P_m$ is not easily obtained. As indicated in the appendix, a plot of equation (1) will give a straight line when the correct value of $P_m$ is selected. The best method of obtaining a solution for $P_m$ is to plot $\tanh^{-1} P/P_m$ against time for various assumed values of $P_m$. Figure 3 shows such a plot for 3 assumed values of $P_m$ based on the pressures shown in Figure 2. As can be seen from Figure 3 a value which will give a curve bending upward will represent a value of $P_m$ too low and a

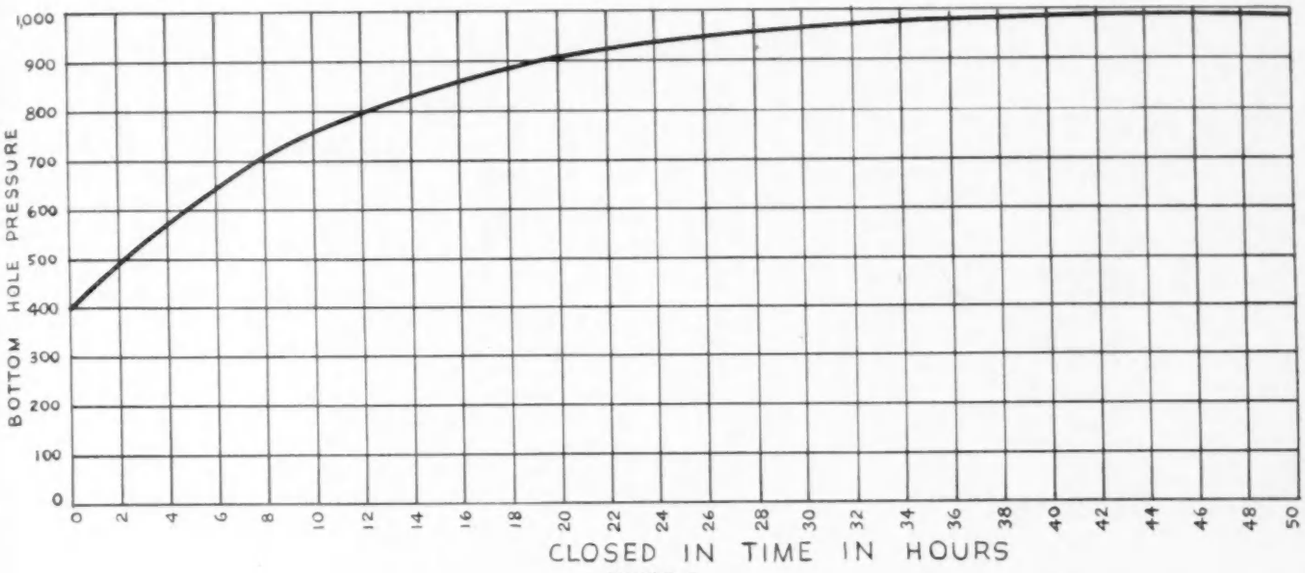


**FIGURE 2**

value giving a curve bending downward will correspond to too large a value of $P_m$.

Considerable time can be saved in making such a plot if a scale showing values of $P/P_m$ as indicated in Figure 4 is used. This scale can be held beside any cross-section paper and the values plotted directly. This greatly reduces the numerical work involved since only the pressure ratio need be calculated. With such a chart a plot as given in Figure 3 can be made in a few minutes and does not require use of tables. Table 1 lists a few values for $\tanh^{-1}$. They can be found in handbooks or calculated from the general series expansion.

$$\tanh^{-1} y = y + \frac{y^3}{3} + \frac{y^5}{5} + \frac{y^7}{7} + \quad (2)$$

**The Calculation of Well Capacity**

The method of calculating the well capacity depends on use of the equation developed in the appendix. It will be noted that the factor corresponding to the slope of a straight line or the coefficient of t in equation (1) is a function only of $P_m$, the casing volume V and the productivity index C. The value of $P_m$ can be obtained as outlined

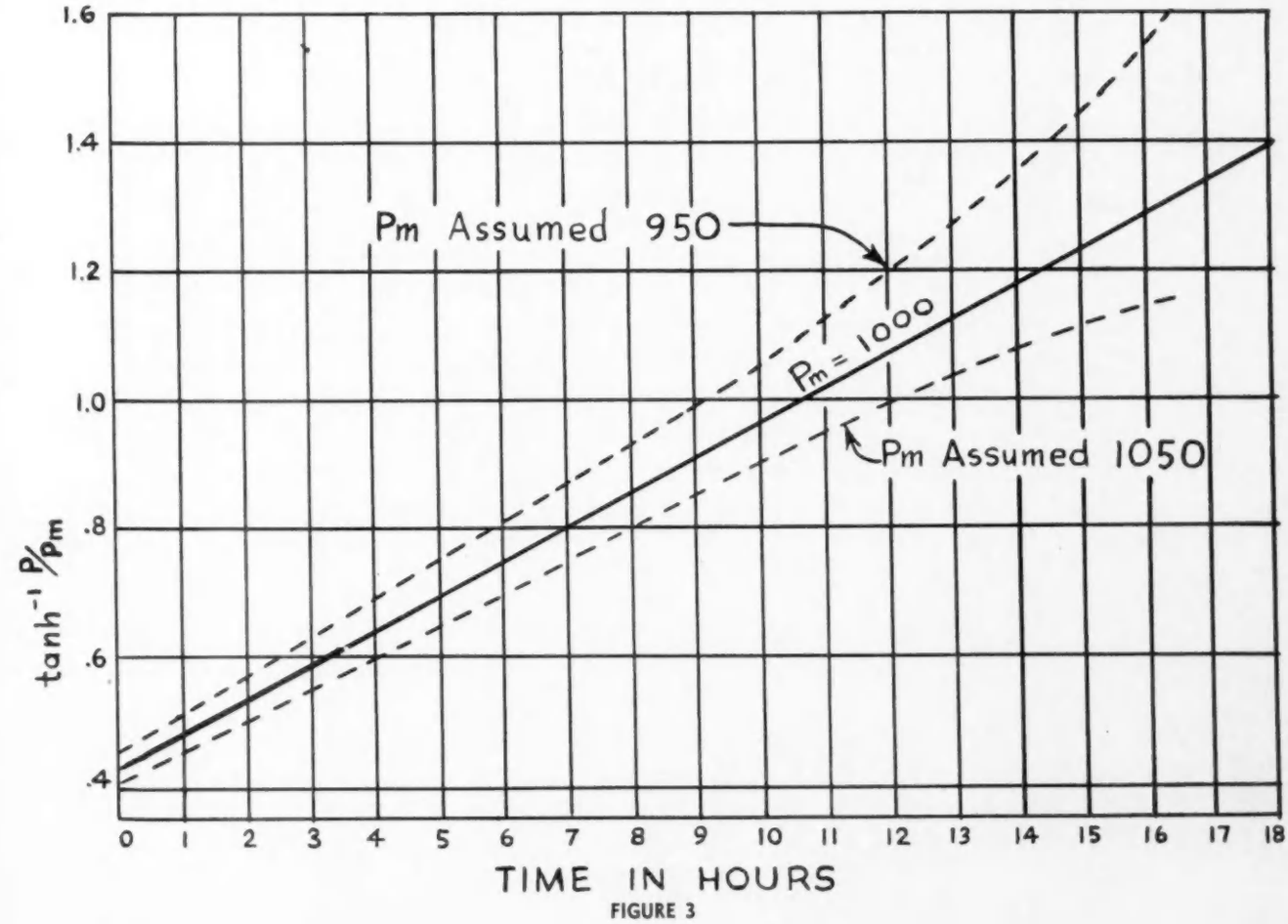


**FIGURE 3**

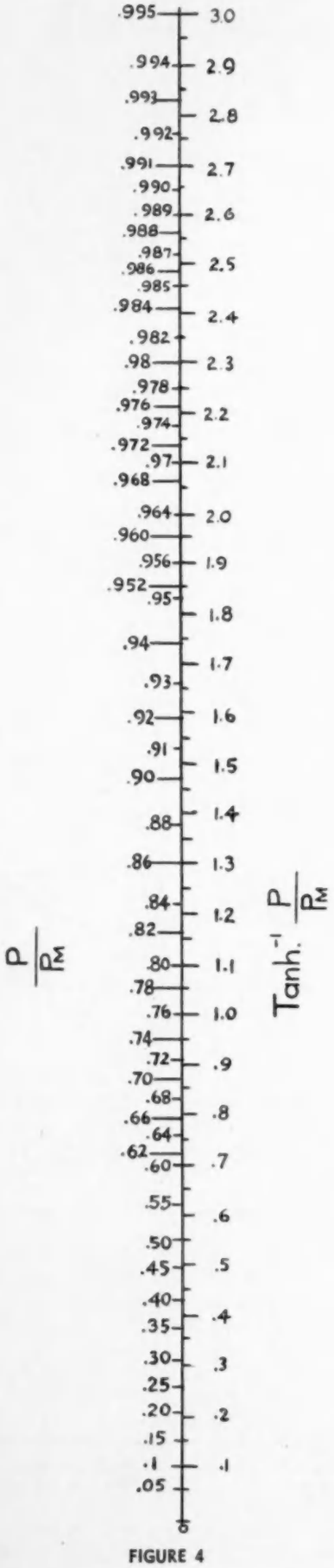


FIGURE 4

**TABLE 1**
**Values of Inverse Hyperbolic Tangent**

| P/Pm | $\tanh^{-1}$ P/Pm | P/Pm | $\tanh^{-1}$ P/Pm |
|---|---|---|---|
| .05 | .05 | .75 | .97 |
| .10 | .1 | .8 | 1.1 |
| .15 | .15 | .82 | 1.16 |
| .20 | .21 | .84 | 1.22 |
| .25 | .26 | .86 | 1.29 |
| .30 | .31 | .88 | 1.38 |
| .35 | .365 | .90 | 1.48 |
| .40 | .425 | .92 | 1.59 |
| .45 | .485 | .94 | 1.74 |
| .50 | .55 | .96 | 1.95 |
| .60 | .69 | .98 | 2.30 |
| .65 | .78 | .99 | 2.65 |
| .70 | .87 | .995 | 3.00 |

above and the volume of the casing or the annular space between casing and tubing and the free area of the tubing can be easily calculated or obtained from casing and tubing tables. If then the value of the factor $\frac{P_m C}{V}$ can be found C can be calculated directly.

As indicated in the appendix the slope of the line for the correct value of $P_m$ as found from Figure 3 will give the value of this product. The slope from Figure 3 will be

$$\text{Slope} = \frac{\text{difference in } \tanh^{-1}}{\text{difference in time}}$$

If for example we consider the time period from 0 to 10 hours we find that $\tanh^{-1}$ is respectively .425 and .96

$$\text{Slope} = \frac{.96 - .425}{10 - 0} = .0435$$

we can then write

$$\frac{P_m C}{V} = .0435$$

From Figure 3 we see that $P_m = 1000 \times 144$ lb./ft².

If the well is cased with 24-lb.—6⅝ casing and is 5000 feet deep we have

$$V = \frac{27.5 \text{ in}^2}{144} \times 5000 = 955 \text{ ft}^3$$

So that

$$C = \frac{V}{P_m} \times .0435 = \frac{955 \times .0435}{1000 \times 144} = .000288$$

The capacity of the well to produce can then be found from the expression

$$Q = \frac{C}{P_o} (P_m^2 - P^2).$$

Where Q is cubic feet per hour measured at pressure $P_o$.

If $P_o$ is 14.7 lb./in.² = 14.7 × 144 lb./ft², and if we assume P = o for maximum possible flow, the well for which Figure 3 was drawn would have a maximum capacity of

$$Q = \frac{.000288}{14.7 \times 144} (1000 \times 144)^2 - 0^2 = 2820 \text{ ft}^3/\text{hr} = 68{,}000 \text{ ft}^3/\text{day}.$$

The producing capacity at a back pressure at the sand face of 500 lbs./in.²

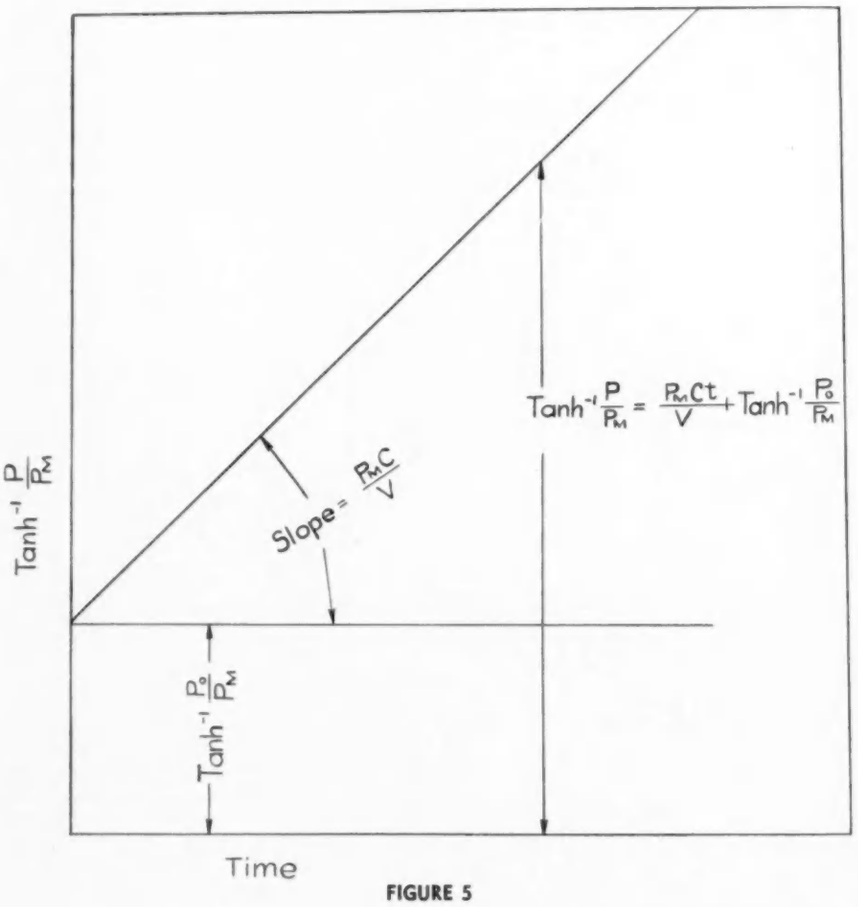


FIGURE 5

PARTS

PARTS

PARTS

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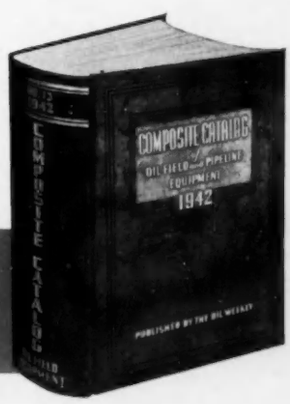
For parts replacement on the equipment you are using, refer to The Composite Catalog, 1942 edition. You will find that most of the 351 manufacturers of oil country equipment who have filed their catalogs in The Composite Catalog give information on parts in it.

There is no need that you be isolated on the equipment you *must* have and *can* buy . . . . you'll find more than 2400 pages in the 1942 Composite Catalog giving information on more than 1000 oil country equipment items.

## Use Your Composite Catalog and Save Time




# the COMPOSITE CATALOG

OF OIL FIELD AND PIPE LINE EQUIPMENT

could be calculated from equation 3 giving

$$Q = \frac{.000288}{14.7 \times 144}$$
$$[(1000 \times 144)^2 - (500 \times 144)^2] \times 24$$
$$= 51{,}000 \text{ ft}^3/\text{day}.$$

The method just outlined gives another means of determining well capacity and reservoir pressure. For certain cases it may possess many advantages over other methods. This is particularly true where a well is closed in periodically to study variation in reservoir pressure. Some other uses for such information will be discussed in future articles when applications to reservoir problems is discussed.

### Appendix

The general formula for calculating the build-up pressure and well productivity factor can be derived as follows:

If we let V = volume of space in which pressure is to build up, $P_o$ the pressure at which the volume or flow rate is to be measured, Q = the flow rate and $\frac{dP}{dt}$ the rate of change of pressure with respect to time we can write

$$Q = \frac{V}{P_o} \frac{dP}{dt} \qquad (3)$$

Since the rate of flow from a well with any back pressure P is given by

$$Q = \frac{C}{P_o} (P_m^2 - P^2) \qquad (4)$$

where C is the productivity index factor and P the pressure at the sand face when producing at rate.

By equating these we find an expression only in terms of P.

$$\frac{V}{P_o} \frac{dP}{dt} = \frac{C}{P_o} \qquad (P_m^2 - P^2) \qquad (5)$$

This expression can be integrated giving

$$\tanh^{-1} \frac{P}{P_m} = \frac{P_m C t}{V} + \text{const.} \qquad (6)$$

If $P = P_1$ at time $t = o$, the constant of integration becomes $\tanh^{-1} \frac{P_1}{P_m}$ and the solution for this case would be

$$\tanh^{-1} \frac{P}{P_m} = \frac{P_m C t}{V} + \tanh^{-1} \frac{P_1}{P_m} \qquad (7)$$

It will be noted that this corresponds to the equation of a straight line if we let

$$\tanh^{-1} \frac{P}{P_m} = Y$$

$$\frac{P_m C}{V} = m$$

$$t = x$$

$$\tanh^{-1} \frac{P_1}{P_m} = b$$

This equation would then take the form

$$Y = m x + b \qquad (8)$$

The significance of these various factors are indicated in Figure 5. The so-called y intercept b is the constant term in the equation. The slope is seen to be equal to $\frac{P_m C}{V}$ Once $P_m$ is found the productivity index can be calculated from the relation

$$\frac{P_m C}{V} = m.$$

The above expressions work very well if the maximum reservoir pressure is known. In the type of problem to which these relations are applied $P_m$ is not known. The equations can be used to determine the value of $P_m$ if a trial and error method is used. If a value of $P_m$ is assumed and put into equation 7 a plot can be made of $\tanh^{-1} \frac{P}{P_m}$ against time. If the resultant plot is a straight line, the value of $P_m$ assumed must be correct. If the assumed value does not give a straight line then another value should be assumed. The limitations on this method are merely that equations 3 and 4 hold. The general conditions involved have been considered in detail by Muskat.[3] The above derivation for gas wells follows the same general procedure to be used in determining a method of using build-up pressures for oil wells.

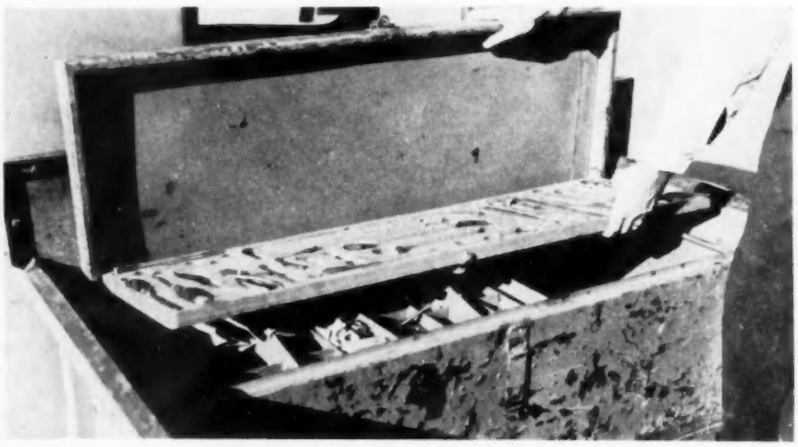
#### REFERENCES


[1] Application of Well-test Data to the study of a Specific Gas-Production Problem by M. S. Schellhardt, E. J. Deivees, and W. H. Barlow, U. S. Bureau of Mines RI 3493.

[2] Applying Bottom-Hole-Pressure Data to Production Problems—Part IV by Emory Kemler, The Oil Weekly, Sept. 21, 1942, pp. 30-34.

[3] Use of Buildup Pressure Data or Rise in Fluid Level in Pumping Wells in Determining Production Capacity of Well and Reservoir Pressure by M. Muskat, AIMME.


## MAINTENANCE HINT



# Tray Reduces Loss of Hand Tools

IN PRE-WAR days, a lost hand tool meant little more than its cost plus the small amount of time required to replace it. Today, a lost hand tool is considerably more serious, and to prevent or decrease such losses, the field repairman of one company recently made a box which is nearly fool-proof in keeping track of small tools.

The large tool box permanently mounted in the back of the small pick-up truck was remodeled slightly to permit installation of a solid tray which can swing up and latch into the cover of the tool box. On a single board of dimensions to fit into the inside of the cover, was laid every important hand tool. Outlines of these tools were drawn on the board, following which they were cut out with a small jig-saw. The cut-out board was backed with a sheet of ¼-inch plyboard, hinged to the cover on the inside edge, and provided with a sturdy bolt-type latch. The tray full of tools, when latched in place up inside the cover, is entirely out of the way when access is desired to the lower section containing the larger tools and fittings.

The greatest advantage realized from this arrangement lies in the fact that following a job, or at the end of the day's work, a single glance at the small tool tray enables the mechanic to determine if any of the tools are missing, and if any, which ones. A surprising reduction in the number of lost tools has occurred since the installation of this inexpensive feature. As a time saver, it likewise has certain advantages.

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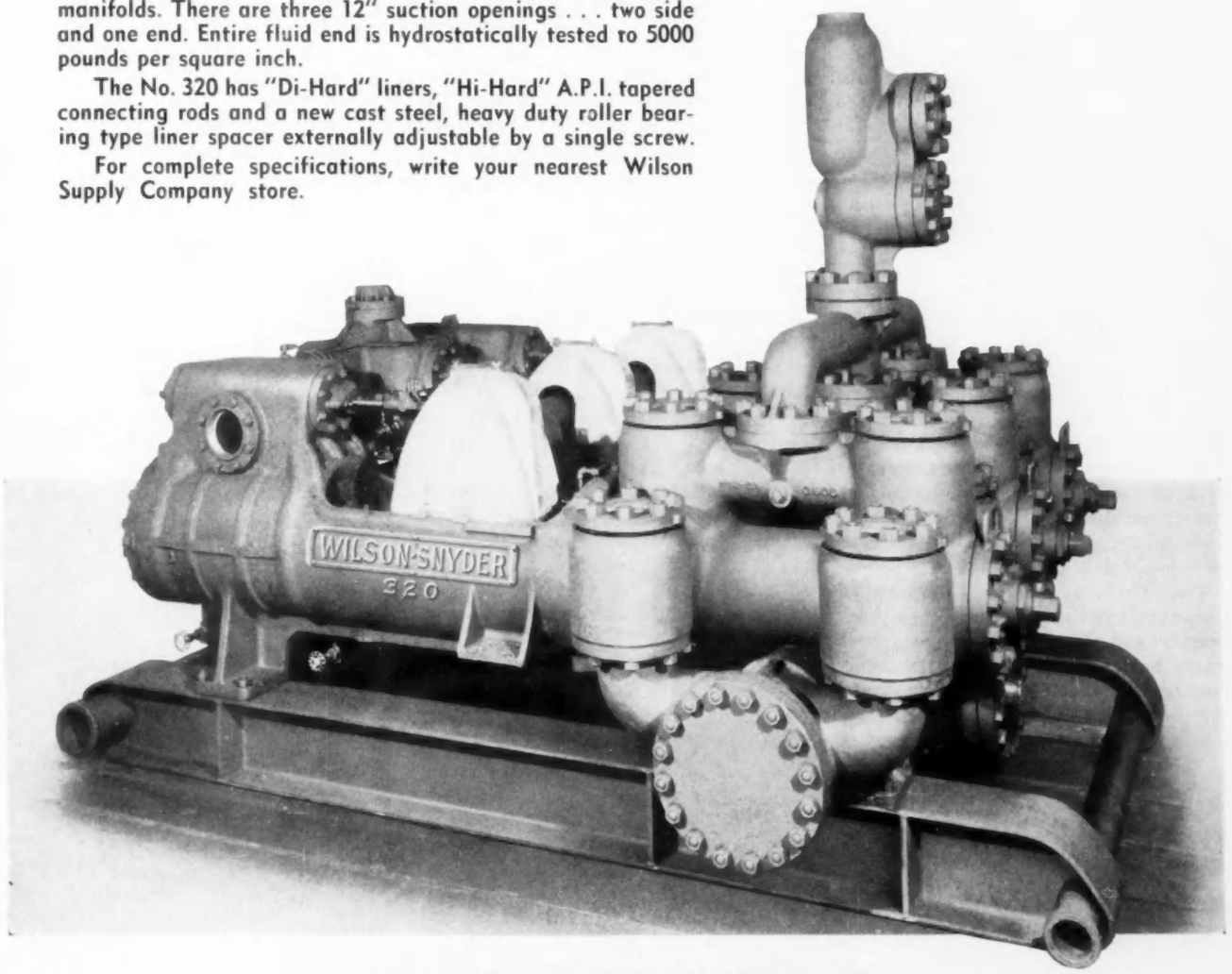


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# Simple Exhaust Preheaters Aid Boiler Service and Life

NOW that it is more imperative than ever before to obtain the best efficiency from drilling equipment and also to prolong its life, many more contractors are using exhaust-steam heaters to preheat boiler feed-water. This offers several benefits, relieving boilers of prohibitive scale deposits and precipitates with the resultant frequent scraping and cleaning, and also provides substantial savings in fuel costs. The devices also condense steam which would otherwise be wasted into the air, since they utilize steam from combined exhausts of pumps and engines.

Many of the devices now being used are self designed and constructed. The popular type operates on the closed-heater principle, in which either water or steam is confined within circulatory pipes and surrounded by the other element without freely mixing. The majority of heaters warm water externally by means of a coiled system, exhaust steam enveloping the coils passing through the apparatus, heating the water contained in the coils.

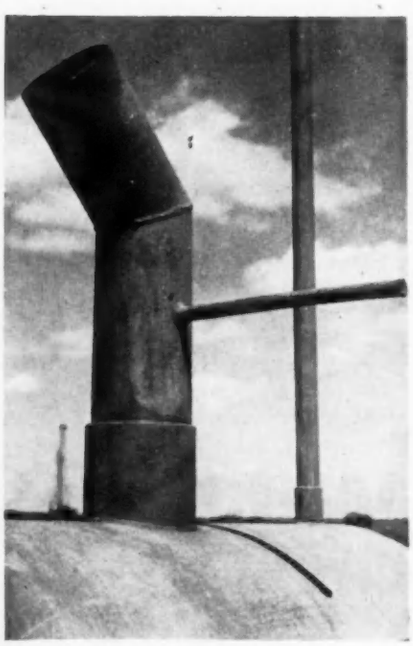
Tom Graham Drilling Company of Corpus Christi on several rigs uses compact and efficient externally-warmed water heaters, skid-mounted to facilitate transportation to other locations. Each apparatus includes a main heat-exchange chamber approximately 12 feet long and 3 feet in diameter, erected on skids made of 6-inch pipe with overall length of 14 feet. Both ends of the cylinder are sealed with welded circular steel plates. A hole is cut through the inlet end and equipped with fittings for making connection with an 8-inch nipple and a flange for joining with the 8-inch pipe which conveys steam into the chamber. At the other end, holes are cut and threaded for connecting three 2-inch pipes to furnish connection for two conductor pipes which run from the boilers to the heater and return, and a third pipe for draining condensed vapors from the inside of the cylinder and conveying the condensate to the boilers for further use.

Inside the chamber, 150 feet of 2-inch pipe is bent and coiled longitudinally, with all water passing through the tortuous coils before being emitted through the 2-inch return line to the boilers. During passage of water, it is at all times subjected to treatment by steam which is in constant contact with the outside surface of the coils.

Steam is received directly from the several drilling engines. An 8-inch line leading from the mud pump exhausts and a 6-inch line from the rotary and drawworks engines join near the flange connection with the cylinder, and the two lines enter the chamber in a single 8-inch pipe, flanged securely for a tight connection. Steam passes through the large conductor pipe and is directed into the chamber before losing its heat, being free to blow with little resistance through the device, contacting the coils during its passage.

Near the opposite end of the chamber, an 8-inch collar is welded in vertical position for the exhaust outlet, which is comprised of a 3-foot extension pipe constructed of two pieces 18 inches long, with the top section set at a 30° angle. On the lower portion, a 2-foot rod is welded perpendicularly, serving as a lever to turn the exhaust

**At one end of cylinder, connections are provided for three 2-inch pipes, two for water circulation from boiler and return, and the other to drain condensate from cylinder for use as boiler water.**



**Exhaust from heater leaves through pipe which may be turned by lever to conform with wind direction.**

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The M-M-O Bottom Hole Orientation is a fast, accurate, inexpensive and self-checking method developed to assure correct orientation of deflecting tools. It is accurate to within **one-half degree** and **speedy,** as no drill stem orientation is required and the **operation is done by one man on the derrick floor.**

Directional drilling becomes more efficient than ever when the K-K Whipstock and Removal Sub is employed. For objective drilling, straightening crooked holes or sidetracking lost tools, the K-K Whipstock and Removal Sub does a remarkable job. It permits: 1. Rotation of the drill pipe, without premature failure of the shear pin, due to torsional stresses. 2. Removal of the whipstock at the will of the operator. 3. "Rotating out" of the drill pipe in the event a tight place is encountered at any point in the hole.

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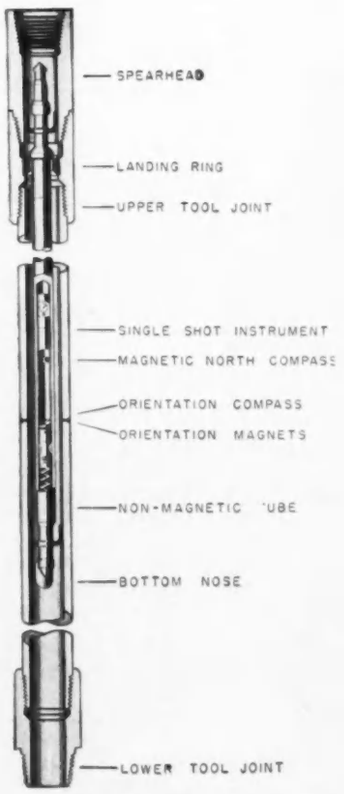

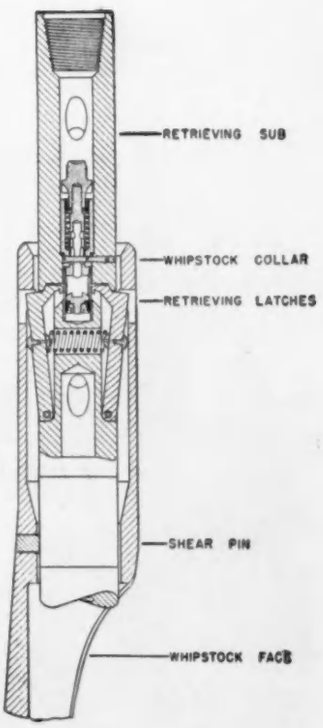


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OKLAHOMA CITY, OKLAHOMA

in any desired direction, to take advantage of the wind in blowing steam away from the rig, and at the same time providing a muffler to direct noises of the exhausts from the crew. Equipped with a flange at the connection with the 8-inch steam pipe and with unions on each of the three water circulation and condensate pipes, the apparatus is placed in operation by setting in position and connecting with necessary lines with little time required.

H. R. Smith of Alice, Texas, employs a similar principle for preheating boiler feed-water, using a 30-foot cylinder made of 16-inch pipe and containing nearly 300 feet of 2-inch pipe in longitudinal coils for conveying water through the structure and for circulation back to boilers. Steam enters the apparatus by means of an 8-inch pipe from the combined engine exhausts, and after contacting the coils is expelled into the air through an 8-inch vertical pipe adjustable for altering direction with the wind.

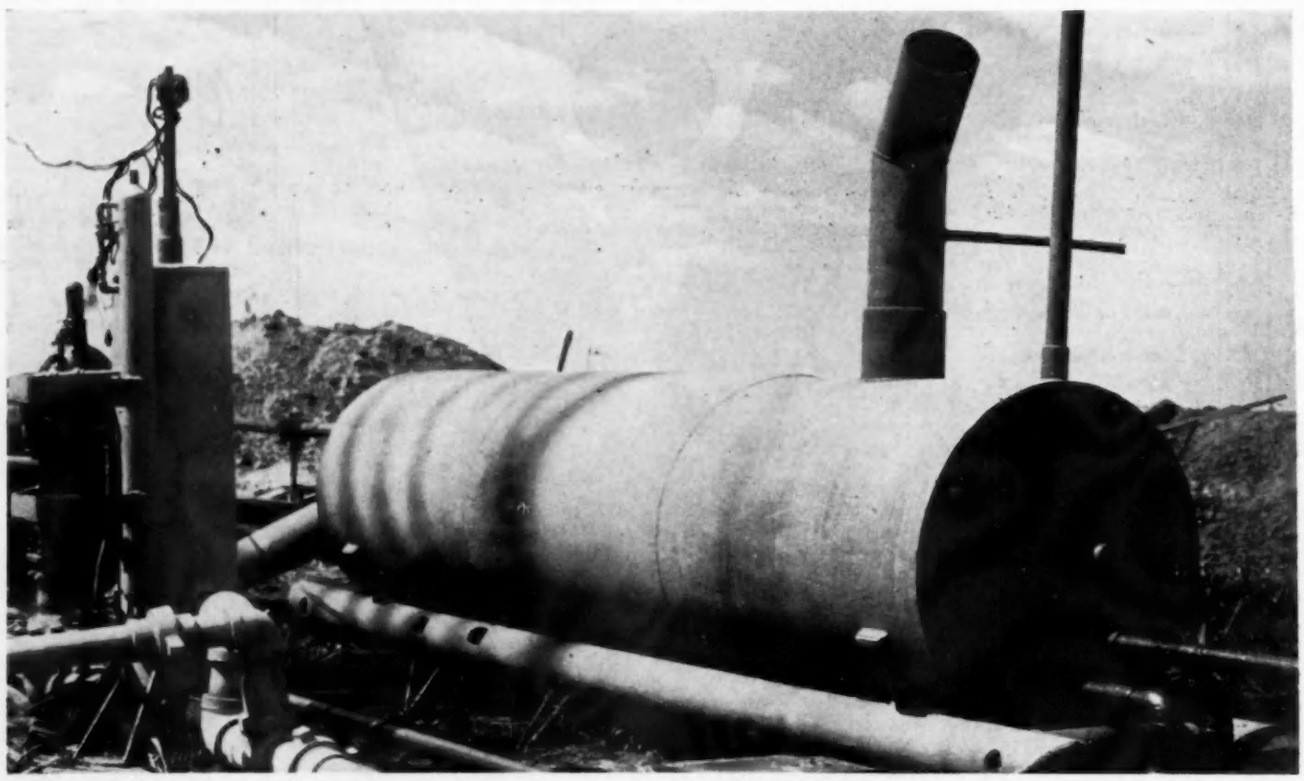
An additional serviceable feature of the heater is provided by the design of its 4-inch skids. A guard rail is welded to the skids, braced at intervals by supporting corner posts, and made of piping sufficiently sturdy to allow the assembly to be lifted as a unit when changing locations, and either skidded or placed on a truck with the rails offering protection against damage. A dual purpose is served by the rails, as during moving operations, drill pipe joints are stacked inside the guard enclosure to facilitate loading and transportation.

A major company reverses the heating procedure, favoring the "fire-tube" arrangement similar to the system used in boilers of the locomotive type, wherein the heat is contained inside the coils. Exhaust steam is circulated through the 2-inch pipe while water passes freely over and around the heated tubes, and in the contact, receives heat.

A device for regulating amount of exhaust steam received by heater is used by Doug Corgey, Corpus Christi drilling contractor. While the exhaust lines are combined and connected to the heater, an outlet is provided to divert steam and allow it to by-pass the heater entirely or in such amounts as are desired. The outlet consists of a short piece of 6-inch pipe, and near its terminus is placed an apparatus similar to a damper, made of a circular steel plate the same size as the inside diameter of the pipe, pinned at two points separated by 180° on its circumference to allow rotation inside the exhaust pipe. A lever outside of the pipe is attached to the plate, and by its movement, position of the plate is regulated with the pins serving as pivots. When the plate sets perpendicular to the inside of the pipe, flow of steam through it to the outside is prevented, the entire volume of exhaust steam being forced through the exhaust pipe and into the heater. Likewise, if the damper is opened, exhaust steam, taking the path of least resistance, is ejected into the air without entering the heater. By regulation of the damper, volume of steam entering the heater is controlled and temperature of the preheated water is determined.

The adjustable lever is reinforced during the wide arc of its movement by a semi-circular rim of steel which is welded to the pipe in position to conform with the arc. A small hole is drilled through the lever, and on the rim are drilled several similar holes. The damper is locked to prevent movement by placing a pin through the overlapping holes when the lever is in the desired position.

Operators using exhaust-steam feedwater heaters calculate that their boilers last longer due to receiving preheated water which lessens boiler repairs, adding to the lives of flues and reducing the number of flue jobs, in addition to avoiding blowing the stacks hard. Tom Graham Drilling Company uses auxiliary heating methods in conjunction with exhaust-steam heaters, warming feed-water directly from boiler steam; and with their combination water heating methods, state that their fuel requirements are materially reduced,



**Exhaust-steam feed-water heater operated by Tom Graham Drilling Company consists of large cylinder containing coils of 2-inch pipe. Water in the pipe is heated by exhaust steam which is directed through the chamber and expelled into atmosphere. Condensed steam is drained from cylinder and returned to boilers.**

# Oil Tool Manufacturers' Secret Weapon...

## the "Know How" in a machine age war

DOING the impossible is the every-day experience of oil tool manufacturers. It, therefore, did not astound executives of these companies to be asked to rearrange their plants, tool up, manufacture, and deliver implements of war on "impossible" schedules. That so many of them are doing this along with other manufacturers throughout the nation is proof that the Axis war lords miscalculated the power of the United Nations' secret weapon . . . the "know how" in a machine age.

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When peace comes and the oil industry is forced to greatly expand to take its share of America's bigger place in the world of industry, oil men will find at Mission the same progressiveness in the design of oil industry products that has made it a leader. In the meantime, we want you to call on us for ways of making the Mission tools you now have give better performance and longer service.

●

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MISSION ROTARY SLIPS MISSION SWABS MISSION PLUG VALVES

**Outlet pipe on Doug Corgey's rig provides by-pass for steam to allow regulation of amount directed to heater. This gives control over temperature of water.**

with actual figures showing large savings in fuel demands.

In addition to reduced fuel requirements resulting from use of preheaters, operators state that treating water in this manner offers considerable advantage in removing many scale-forming substances which become insoluble in the heated water and are precipitated. Total volume of solids is at times reduced 28 percent, while hardness of feed-water is reduced 42 percent. Increases are observed in horsepower capacity of boilers, and boiler water consumption is materially lessened.

**This heater is protected by a guard rail during transportation. Drill pipe is also loaded inside rail to expedite moving or loading.**

# Factors Affecting Changes In Crude Oil Gravities

By RIVERS REAVES, Staff Writer

WHERE are a number of factors that have a direct and indirect influence upon the gravities of crude oils. The relative importance of these various forces long have been a source of discussion. Few hard rules can be specifically established for a large number of producing areas, but definite conclusions can be reached as to the conditions affecting gravities in some fields that have similar producing characteristics and sand formations.

The purpose here is to discuss the highlights of these factors as they bear upon the economy of production practices.

There are two types of fields, roughly speaking: the closed type reservoir and the water-drive field. As the closed type of reservoir declines in production the gas-oil ratio increases and more of the light ends are carried off as vapors. The gravity of the oil there may decrease slightly with the age of the field. In the second or water-drive field the gravity will remain fairly constant until the wells begin making considerable water. As this process comes about the temperature at which the oil is separated from the gas tends to increase, thereby bringing about a slight change in gravity. Based upon a study of available records it has been found, however, that gravities rarely change more than three degrees maximum over a period of years.

In a broad analysis the gravities of oil in stock tanks are affected by the following factors:

1. The composition of the oil-gas mixture as it leaves the reservoir.
2. The pressure at which gas-oil separation occurs on the lease.
3. The separating temperature.
4. The number of stages of gas-oil separations through which fluid passes before going to the stock tank.
5. The effect of the water produced.
6. The effect of gas lift.
7. The method and practices used in treating emulsions.
8. The impurities and content of the treated oil.
9. The accuracy of making determinations.

The gravity of oil produced from a specific reservoir, that is to say, a sand of average thickness in any particular field, ordinarily varies a very small amount, provided the oil is either saturated or under-saturated with gas.

### Little Variation

An example of this condition is the East Texas field which is under-saturated. There is very little variation of natural gravities throughout the field. This is also true of most reservoirs. In areas where there is an excess amount of gas or a gas cap, the gravities may be higher or lower as a result of the excess gas, depending presumably upon whether the gas strips volatile fractions from the oil or whether the gasoline content of the gas adds to the oil, thereby raising its gravity.

It has been estab'ished that in many fields the gas-oil mixture contains a relatively small amount of butanes and propanes with the result that there is no appreciable volume of volatile fractions that can be affected by operating conditions. Examples of this condition are fields on the Texas Gulf Coast that produce from the Frio sands.

Also there are a number of fields in which gravities vary over a wide range, especially where the sand or sands are lenticular or rather thick. It is common in such fields for the upper portion of the sand, or the lenses that occur in the upper part of the producing horizons, to produce oil having higher gravities while the oil produced from the lower horizons are of lower gravities.

It has been found, however, where there is considerable variation of gravities in a single field, the gravities of oil from wells that are produced from the same lenses or from the same depth in a fairly thick sand body are similar.

In fields in which the oil-gas mixture contains very few casinghead fractions, it is quite unlikely that the age of the field or the bottom-hole pressure conditions can in any way affect oil gravities. It is conceivable, however, that in gas-drive fields where the fluid is rich in casinghead fractions that the gravities can be altered during the life of the field as a result of the gas coming out of solution in the formation.

Therefore, it is obvious that an increase in casinghead gasoline from the well must result in the lowering of the gravity of the oil produced, except in cases where such gasoline is recovered from a product which was previously lost, or where it was drawn from oil still left in the ground. In the first instance the economic gain is clear. In the second case an ultimate loss is indicated as casinghead gasoline produced from the oil left in the ground necessarily lowers the gravity of the oil remaining, thus lowering its value and making its recovery more difficult.

It often happens that a justification of a change in production practices is based on an increased gasoline recovery from the gas produced with the oil. Except in some cases increased casinghead gasoline production can occur only when such gasoline is taken directly from the oil produced, thus lowering the gravity and its value, the net results to the oil producer remaining substantially the same.[1]

### Separator Pressures and Temperatures

For any given gas-oil mixture the separator pressure is very important in regard to oil gravities provided the casinghead fractions are present which permit the operator to include such fractions either in the gas stream or the oil stream by varying separator pressures. In a field such as Conroe, a 39-degree oil can be produced by holding 125 pounds back pressure on a single-stage separation. If this same pressure is lowered to atmospheric pressure the gravity is reduced to 37.5 to 38.0.

Separator temperatures are important since any change in temperature completely changes the equilibrium conditions at any given pressure. The casinghead fractions present can be put into the gas phase by increasing the temperature or conversely at lower separator temperatures, the volatile fractions re-

maining in the crude stream. In this connection the Texas Railroad Commission found it necessary to make limiting rules for the East Texas field.

### Number of Stages

One old practice that is followed by many producers to obtain maximum gravities is the use of multi-stage gas-oil separation. This procedure usually consists of passing the fluid through a 500-pound-working-pressure separator and then passing the oil through a 100-pound separator from which the oil goes to stock tanks. These practices are followed to remove as much lean gas as possible in the first-stage separator to prevent the stripping effect that would be obtained if a single-stage separation were used.

Water produced has a decided effect on oil gravities, the most important of which is by increasing the separator temperature when the water-ratio becomes high. This simply means that as the percentage of water produced increases, the average separator temperatures become higher than they were during the period in which pipeline oil was produced. Oil gravities in the stock tanks will decrease.

Gas lift has a definite influence on the stock-tank gravities when the gas used is lean or the gas-oil ratio is greatly increased. The effect in this instance is one of stripping volatile fractions from the gas-oil mixture in excess of that which would be removed from the mixture by a normal volume of produced gas.

One record was obtained showing the effect of placing a flowing well on gas lift. During the three-year flowing period the gravity ranged between 28.4 degrees and 29.7 API. As a probable cause of the change in gravities, one suggested the varying conditions of equilibrium within the flow string and the drainage area surrounding the well. When the well was finally placed on gas lift there was a quick drop of 1.5 degrees in gravity. The low point observed under gas-lift was 26.2 degrees. Under pumping operations the gravity again reached 29 degrees with an average over a considerable period of 28.8 degrees.

In some cases the effect of gas lift is not immediately noticeable. The application sometimes increases the pressure against the formation so that more gas is retained in solution as the oil enters the well. This method may partially neutralize the effect of the introduction of dry gas.

### Emulsion Treating Operations

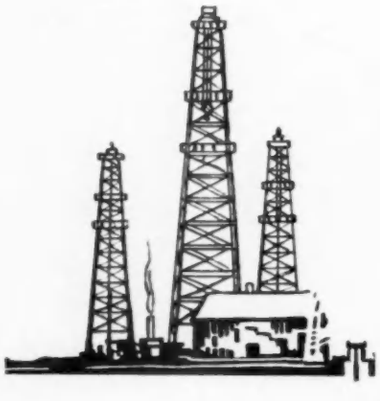
Oil treating does not affect oil gravities if it is carried out without heat being used in the process. When heat is used in treating, however, care should be exercised in order that gravities are not lowered unnecessarily. Any increases of temperatures of fluids handled in a treating plant necessarily cause gas and gasoline fractions to come out of solution unless this is taken care of in the design of the plants. The design of the treating plant has a lot to do with whether or not these fractions are lost with the result that lower gravities are obtained.

In the more modern types of oil-treating plants provisions are made to allow the use of relatively high treating temperatures without sustaining gravity losses. The usual methods of obtaining control of gravities is through the use of these systems: (1) in which 5 to 10 pounds pressure can be carried, or (2) in which more than one gas-oil separation is used, or (3) in which the heated and treated oil is cooled by heat exchange before losses occur. Oil that is treated often contains up to one percent water. Any such impurities, being heavier than oil, cause a measurable lowering of oil gravities.

### Determinations Simple

The determination of the API gravity of a crude oil is a fairly simple test, but with some crudes under certain conditions, particular care must be taken to insure accurate determinations. Care is not always taken in the field and in most cases the errors made indicate higher gravities than actually exist.

Highly viscous crudes, which are usually those that contain a high percentage of asphalt and crudes that congeal at a relatively high temperature because of their wax and paraffin contents, often contain free gas bubbles in the stock tank oil, particularly in cold weather. Gravity determinations made on such gas-cut oils have no meaning as far as true gravities are concerned. Temperature readings taken to correct the gravity must be accurate and the proper expansion coefficient applied.



### Gravity and Price

A rather difficult phase of buying and selling crude oil seems to exist as pertains gravities in certain fields and areas. It has long been a practice in the industry to vary the price on a sliding scale of gravities. This does not necessarily mean that 39-gravity oil, for example, is always worth two cents per barrel more than 38-gravity oil to the refiner due to the fact that where field operating practices can cause variations in gravities, it is possible for an operator to produce a 39-gravity oil when the optimum oil gravity or the highest gravity of a reasonably stable oil for that particular field might be 38 or even 37 degrees.

On the other hand if the so-called optimum gravity is 38, a careless operator, by his treating or other practices, might produce an oil having a gravity as low as say 34. Such a condition is somewhat overcome at present by purchasers posting a top price for certain gravities in a particular area and for certain types of crude and penalizing the producer for producing lower-gravity oils. If such sliding scales of gravity actually reflect the value of the oil to the pipe line companies and refineries, there should also be a penalty for producing oils having a gravity above the optimum gravity for that particular field.

Oil gravities are always lower at the refinery than they are on the lease because pipe-line handling results in evaporation losses and a change in reflected in lower gravities. Oil that is allowed to stay in storage for any length of time also suffers a reduction in gravity due to breathing of storage tanks.

There has been a certain amount of work done in some fields to stabilize crude oil on the lease so as to minimize pipe-line evaporation losses. On the other hand there also are practices being used in a number of fields in an effort to artificially maintain oil in higher gravity price brackets in order to obtain the benefit of increased prices where sliding scales of prices have been posted by purchasers.

Considerable has been said in the past about evaporation losses and volatile fractions in lease stock tanks and pipeline systems. Since the advent of vapor-proof stock tanks and improvements in pipe-line practices, these evaporation losses are believed to be of comparatively little consequence except in certain fields and with certain types of oil.

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**Reference:** [1]Robert R. Boyd, "Influence of Production Practices on Gravity," before A.I.M.E.

[*Continued from page 11*]
project, including reversal of lines from Shreveport to Port Arthur and El Dorado to Port Arthur, completed.

Project No. 12—Trans-Florida line, Carrabelle to Jacksonville; 78 miles of pipe welded in Florida; one station at Carrabelle completed and four others under construction; expected completion date February 15; is an 8-inch line to handle 35,000 barrels daily.

Project No. 13—Sinclair's 8-inch line from Corpus Christi to Houston: Being completed to handle 20,000 barrels of crude to take the place of East Texas oil to be diverted to big-inch line.

Project No. 14—The Texas Company's line from Paradis, through Erath, Louisiana, to Port Arthur: 14 miles of 10-inch pipe between Port Arthur and Julien, Louisiana, and 20 miles of 8-inch pipe between that point and Paradis laid; completion expected February 1; will handle special Louisiana crudes to Texas refineries for production of war products.

Project No. 15—(a) Construction of products line from Cushing-Drumright area to Barnsdall, Oklahoma, and (b) relocation of pumping equipment to increase capacity of Great Lakes Pipe Line: Both parts ready to operate; (a) providing 10,000 barrels additional for Kansas City area, (b) increasing capacity of line by 11,000 barrels from Kansas City to Des Moines and by 5500 barrels from Des Moines to Minneapolis.

☆

**PRAISE:** Warnings in 1941 of an impending shortage in Eastern oil supplies and restrictions imposed in anticipation of such a situation, then met "with derision and a flood of misrepresentations," have been found by later events to have been justified, President Roosevelt was told December 30 by Secretary Ickes in the annual report of the Interior Department.

"What the nation would have done to handle its oil problem under actual war conditions had it not been for the earlier work of OPC, I cannot guess," Ickes said. "Now, with war demands for specialized petroleum products increasing daily, it is clear that efforts to provide the aid necessary for war were started none too early."

Most of the review of OPC operations was devoted to praise of the oil industry, regarding which the secretary said:

"In this connection, I want again to emphasize that the remarkable results that have been brought about would have been impossible without the wholehearted willingness of the oil industry to work in full partnership and understanding with the federal government. Too much credit cannot be given to the members of that industry.

"Traditional competitive practices have been laid aside, and many individual companies have willingly accepted severe financial loss to make an integrated handling of the oil problem possible. There is no such thing as 'business as usual' today in the oil industry. Normal patterns have been junked for the duration, and the handling of petroleum from the well to the delivery of the finished product is replete with innovations. As one member of the industry puts it: 'The difficult we do at once; the impossible takes a little longer.'

"Three principal tasks were faced by OPC. They were to provide an adequate supply of petroleum and specialized products for our armed forces; for the United Nations, and for our own civilian front. It has been only by use of considerable ingenuity that we have succeeded as well as we have. With the assistance of the industry, we will continue to dispose of the difficult and to perform the impossible."

☆

**MANPOWER:** Oil company and trade association officials have been asked by the special PIWC Manpower Committee to make full reports on the effects on their organizations of the loss of men through the selective service and through transfer to other industries, with a view to developing a basis for recommendations to the council which will insure adequate manpower for the industry.

The investigation was authorized at the December PIWC meeting and a committee composed of John M. Lovejoy, chairman; Sidney Belither; J. W. Carnes; N. C. McGowen and J. Howard Pew was appointed by Chairman Boyd.

In asking the industry for information the committee pointed out that while it recognizes that every industry is affected seriously by the war and that vast realignments of manpower are inescapable, "Nevertheless, this is an oil war and the first requirement for its successful prosecution is the delivery of petroleum products where and when needed both for military purposes and for essential civilian use."

While statistics covering the loss of men to the military service and to other industries will be helpful it said statements also are desired regarding the loss of efficiency in the various operations—whether more men are now required than formerly to do a given job—whether men are leaving to accept jobs less important, etc.

Each branch of the industry it was pointed out, has activities of particular importance under present conditions and a number of them were listed with a request that they be given special consideration in making reports.

☆

**NEW YEAR:** New problems of oil supply will arise in 1943 and many old ones will intensify, with little likelihood that many of them will be adequately solved before the end of the year, it was declared January 1 by Administrator Ickes in a New Year's appeal to the public to "accept the measures that have so far been taken and which we may yet have to take with respect to the distribution of petroleum products for domestic consumption."

His warning that new restrictions might be necessary was coupled with a forecast that none of those now in effect will be lifted during the coming year.

☆

**CONTRACTS:** Signing of a contract by Rubber Reserve Company for operation of a new government-owned synthetic rubber plant to be built in Louisiaan by Defense Plant Corporation was announced by Secretary of Commerce Jesse Jones, December 31.

The plant will be operated by The Copolymer Corporation, formed by Armstrong Rubber Company, Dayton Rubber Manufacturing Company, Gates Rubber Company, Lake Shore Tire & Rubber Company, Mansfield Tire and Rubber Company, Pennsylvania Rubber Company and Sears, Roebuck & Company.

Jones also announced execution of a contract with Lion Oil Refining Company, El Dorado, Arkansas, to provide plant facilities in Arkansas at a cost in excess of $1,000,000, which it will thereafter operate for the production of unspecified military products.

☆

**ALCOHOL:** Plans for a standardized type of plant for the manufacture of alcohol from grain, to be constructed if and as needed to provide the 100,000,000 gallon increase in alcohol capacity for the production of rubber and other war materials, have been engineered by the War Production Board.

The design calls for a standard plant with a capacity of 10,500,000 gallons a year, handling 12,000 bushels of grain daily, and calls for the use of a minimum of copper and other critical materials.

# PRACTICAL OPERATING *Hints* FOR

**THE practical operating hints for the drilling rig, production man and pipeliner, appearing regularly in these pages, are secured from oil operations everywhere and offer suggestions that will help to improve operating efficiency and safety.**

**The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, The Oil Weekly, Houston,"**

### *1. FISHING TOOLS*

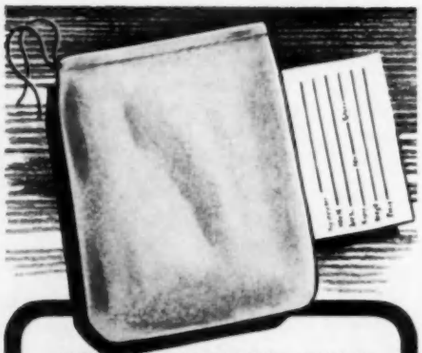
## Cradle Rack Speeds Emergency Tool Use

**Positioned supports protect overshots and other tools from damage and enable quick inspection and selection when one is needed for use in the hole. Rack is built from scrap tubing.**

IMMEDIATE availability of a fishing tool is of utmost importance to the driller when trouble unexpectedly develops in a drilling well, located far from supply centers.

The over-shot being one of the tools most frequently required, one drilling superintendent had the welder build up a handy rack on which could be supported several sizes of such tools which might likely be needed at that particular well. The all-welded, well braced rack was made of salvaged 2-inch tubing. Heavy strap iron loops or cradles were welded to the framework on both sides of the longitudinal center upright so that tools on either side of the rack would be balanced.

Set up at some convenient place near the well, the rack serves to keep the tools out of the sand, mud or oil, and readily available should an emergency arise. Threads are more easily protected, and as most companies keep such tools well painted to prevent rusting and corrosion, the paint jobs usually last longer than if the tools were laid on the ground. Supporting cross-members of drill pipe and casing racks ordinarily are too far apart to aid in racking of the short fishing tools of this type.

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### *2. MEASURING LINES*

## Snatch Block Take-up Controls Reel Speeds

WHEN running a line into the hole, as for a survey, the speed and drive of the measuring line unit may easily be controlled with a drive made from an endless spliced rope, using a snatch block on the derrick manila line for tensioning.

By carrying the drive over the snatch block, and hoisting it until the desired tension is secured, the man at the cathead can accurately gauge and control the drive, and, by simply dropping the snatch block on its support, can cause instant stoppage of the winding.

Use of the snatch block for belt-tensioning device enables any endless rope to be used, and permits the measuring line reel to be shifted about the derrick floor without introducing drive difficulties.

The speed of the reel may be varied over a wide range simply by changing the tension on the drive exerted by the snatch block. The line, driven only by relatively slight contact with the cathead, tends to slip at that point while clinging tightly within the close groove in which it operates on the reel. This concentrates the slippage, and conse-

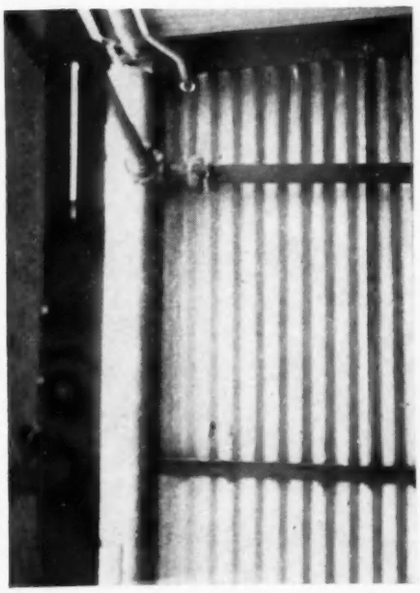
**Catline provides tensioning device which permits close regulation of drive on line unit.**

quently the abrasion, at a point where both frictional heat and surface wear are dissipated over a wide area.

By hooking the snatch block into the lower strand of the drive rope, increased driving arcs are obtained both on cathead and reel.

### 3. BUILDINGS

## Pipe and Unions Act To Speed Rig Shelters



**Welded nipples and quick-acting unions permit sectional erection without loss of binders.**

A COMPANY operating a number of rigs has found that valuable time may be saved when rigging up and tearing down by using quick-acting unions in pipe frames and supporting members of the shelters erected on the derrick floor.

Side rails, studs and corner posts are all fitted with unions which, although no longer pressure tight, give desired alignment and strength to the structure. Each section is thus unitized so that assembly or tearing down may be accomplished simply by driving the clamping member of the union in the proper direction. One man with a hammer can erect an entire house in less time than a few bolts could be assembled and nuts run tight.

Since the union sleeve is retained on that portion of the pipe within the structure, there is no time lost in searching for necessary fastenings, and any variations in alignment of the building sections are compensated for by the adjusting action of the union surfaces as they are pulled tight.

### 4. WASTE STEAM

## Muffler and Hood Curb Effect on Surroundings

STEAM exhausting horizontally from the end of the pipe connection, or in a vertical direction distributes a water spray over a considerable area, often causing serious damage to fruit and shade trees as well as growing agricultural crops. A company drilling several wells in a locality containing fruit and ornamental shade trees built a muffler to be flanged on the end of the exhaust pipe from the combined steam units.

This exhaust muffler, or receiver is made of a large pipe section to which is welded a truncated cone having an extension pipe of much smaller diameter than the body attached to the apex. At the top of this pipe is placed a cover resembling an overgrown sand bucket frequently used for fire protection. The exhaust, instead of rising straight up or being blown sidewise by the wind, strikes the inside of the inverted cover and is deflected downward so that the condensate is accumulated in a sump.

**Expansion and directed drainage of condensation prevent spraying and damaging nearby trees.**

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RHX
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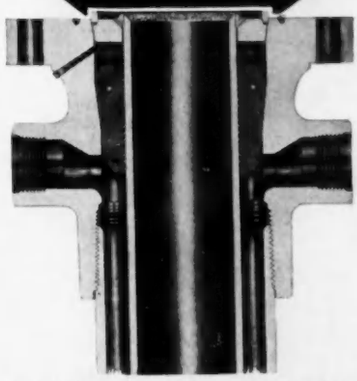

For Safer, More Economical Installation With Higher Pressure Units

A 6000 lb. RHX RECTORHEAD, with 900 series flange, may be set and used during drilling operations, with blowout preventer flanged direct. After oil string is set, a 10,000 lb. test tubing head with 900 series flange on bottom end may be flanged directly to the RHX, using the restricted ring groove, without the use of intermediate flange. *Stocks of all type heads are available for immediate delivery.*

RECTOR

RECTORHEAD
"MAKING THE OIL INDUSTRY SAFER"

# Waste Warden Tells
# HOW TO GET LONGER SERVICE
## from your Welding and Cutting Apparatus

### TORCHES

1. Blow out hose before attaching torch.
2. Be sure the torch seat is clean.
3. Be sure packing nut is tight.
4. Also—don't use torch as a hammer. A torch built to withstand such abuse would be too heavy to handle.

### TIPS

1. Clean tips with proper size standard cleaning drills only. Be sure to use a drill one size smaller than the orifice about to be cleaned. Makeshift wire cleaners enlarge tip openings and upset flame balance.
2. Store all tips in racks to prevent damage. Tips battered at seating end waste gas.

### REGULATORS

1. Keep regulator seat dust free. Before attaching regulator clean outlet by cracking cylinder; clean gland by a short blast from cylinder.
2. Release regulator adjusting screw when changing cylinders. This prevents high pressure shocks to regulator seat.
3. Always open cylinder valve slowly when installing regulator. Repeated sudden cracking of cylinder into regulator promotes leakage.

### DON'T JUNK DAMAGED APPARATUS

Today regulators, torches and tips are hard to replace. Good maintenance practices will help you get longer service and better performance from your gas welding and cutting apparatus.

But if a torch, tip, or regulator is damaged — don't junk it. Instead send it to an Airco Apparatus Repair shop where factory-trained repairmen will make it work like new. This nationwide repair service is available through your nearest Airco office.

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**IDLE CYLINDERS ARE PRODUCTION SLACKERS:** *Keep 'em rolling for victory!*

# The Week's News

## Texas Commission Seeks Production Potentials

The Texas Railroad Commission last week requested operators to supply information upon which it can determine the ability of Texas fields to produce additional oil. The data sought is similar to that which is being gathered by the PAW availability committee.

The request was made in a letter rather than a formal order. Attached to this letter was a statement from Commission Chairman Ernest O. Thompson, pointing out that during 1943 additional oil will be needed, and that it must come from Texas.

Both purchaser and producer in every field in the state has been asked for information.

With estimates made by several different companies in a field, the commission expects to have a better cross section of opinion than will be obtained under the PAW plan, which usually requires information from the major producer only. If Texas is to supply the additional 400,000 barrels of production daily that PAW says will be needed late in 1943. The information sought will be invaluable.

In order to determine where additional oil might be produced, the commission asked that the operators supply the latest bottom-hole-pressure data and the average gas-oil ratio for each field. In addition to that, the operators were requested to estimate how much oil above December production each field might be expected to produce during 12 consecutive months, and during 24 consecutive months.

While the request was not in the form of a commission order, there was every reason to believe that operators would comply promptly and send the information in by January 15, the final date designated. If operators have no information concerning a field, the commission may then assume that it is probably producing at capacity, and use this fact as a yardstick in making future cuts. On the other hand, if there is reason to believe a field can produce more, additional allowances may be assigned there as the demand for oil improves. The letter is set out in full below:

"This is to request," the letter said, "that you furnish the commission on or before January 15, 1943, all of the hereinafter designated information with reference to any field from which you produce or purchase oil:

"(1) Latest available bottom-hole-pressure data including the datum plane at which the pressure was taken together with the date upon which the information was obtained.

"(2) Average gas-oil ratio for the fields from which you either produce or purchase oil.

"(3) Your opinion, which necessarily would reflect the opinion of your engineers, with reference to additional oil that could be produced from each field from which you either purchase or produce oil during a 12 months' consecutive period.

"(4) The same information as requested in No. 3 above but based on a 24-month period. The information in Nos. 3 and 4 will be the amount of oil that can be so produced over the December permitted production."

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## Report Reviews Bureau Of Mines Expansion

Activities of the Bureau of Mines have been greatly expanded during the past year in the fields of strategic minerals and petroleum to aid in the production of war essentials, it is disclosed in a report by Director R. R. Sayers.

While more than doubling its output of helium for military and civilian uses, Sayers reported, the bureau has begun construction of additional facilities to multiply by many times the 1941 output and to exceed greatly the record 1942 rate of production. To assure a continued supply of the gas, surveys have been made for additional plant sites, and bureau engineers are continuing studies designed to reduce production costs.

At the request of OPA, petroleum and natural gas engineers are developing means for utilizing most efficiently the various components of 100-octane aviation gasoline, determining the quantity and nature of hydrocarbons from high-pressure fields for use in the manufacture of high explosives and aviation gasoline, stimulating recovery from shallow oil fields with a minimum use of steel, evaluating the sources and means of obtaining war materials from petroleum including butadiene, and conducting special studies at six field stations to provide solutions to technical problems of oil producers.

In anticipation of the time when the nation's oil reserves may be unable to supply essential needs, bureau chemists have speeded up their progress on the production of motor fuels and lubricants from domestic coals. Since the attack on Pearl Harbor, Sayers declared, the bureau has completed assays of 14 American and Alaskan coals to determine their suitability to liquefaction, obtaining from 35 to 75 gallons of gasoline per ton of coal used, including that utilized in operating the laboratory equipment. Advances also were made in the production of Bunker C fuel oil from coal.

## Magnolia Buys Harrison Properties for $30,000,000

Sale of oil properties of Harrison Oil Company, owning equities in Texas, Louisiana, Alabama and Mississippi, to Magnolia Petroleum Company was announced December 30. Although the consideration was not announced, it was reported to have involved approximately $30,000,000.

Dan J. Harrison of Houston, pioneer Texas oil producer, is president of the company which had about 22,500 shares of stock. The company was founded in 1925 and started its first operations in Liberty County, Texas. Until the time of the sale, the firm's largest production was at Old Ocean, Brazoria County; Conroe; East Texas field, and East Hackberry, in Cameron Parish, Louisiana.

The compay, together with J. S. Abercrombie Company of Houston, was the developer of the Old Ocean field. The trade, however, does not involve the Abercrombie properties.

The company's properties included an undivided approximate one half interest in about 16,000 acres of producing leases in Texas and Louisiana and approximately 80,000 acres of unproven leases in Texas, Louisiana, Alabama and Mississippi.

The producing leases have 163 wells with a daily production of approximately 13,040 barrels. The largest single producing property is at Old Ocean, and the amount involved in this field was an undivided approximate one half interest in around 12,000 acres. This acreage has 76 wells with daily production of approximately 9760 barrels.

The sale was made to D. A. Little of Dallas, Texas, president of Magnolia Petroleum Company, or his nominee.

## Florida Products Line Ready February 1

Trans-Florida Pipe Line Company is scheduled to have its pipe line across northern Florida in operation by February 1. About 50 miles of 8-inch pipe remains to be welded on the 202-mile carrier, which will have capacity of 35,000 barrels of refined products daily. The seven booster stations are 95 percent completed. This line extends from Carrabelle to Jacksonville, and is being built by Defent Plant Corporation from equipment purchased from American Liberty Pipe Line Company in Texas.

## Federal Oil Tax Collections Way Off

Federal gasoline tax collections in November dropped to the lowest figure touched since July, 1940, totaling only $20,719,050, it was disclosed by the Internal Revenue Bureau.

This month's receipts from this source were approximately $11,000,000 under

October, when $31,622,272 was collected and about the same under November, 1941, when they totaled $31,176,356.

Collections from the lubricating-oil tax also declined, amounting to $2,838,152 against $3,266,338 in October and $6,123,407 in November of last year, but receipts from pipe-line transportation increased to $1,219,101 from $1,113,175 in the preceding month and $1,166,256 in the corresponding month of 1941.

The bureau's report showed that gasoline restrictions in the East and generally curtailed driving in other parts of the country already has cost the Treasury nearly $40,000,000 in taxes. The gasoline-tax revenue for the 11 months ended with November was but $308,231,571 against $341,487,599 for the same period last year, and income from lubricating oil was $36,404,102 against $42,258,607. Only the transportation tax remained undisturbed, with collections of $12,583,049 against $12,161,382.

## Formula for East Texas Water Wells

How the Texas Railroad Commission is determining the production from wells in the East Texas field producing excessive water was outlined in a statement issued recently:

If a well with a 20-barrel allowable is producing 200 barrels of water, the present water-oil ratio would be $\frac{20 \times 10}{10} = 20$ barrels. The well's oil allowable would not be affected. However, if a well has an allowable of 20 barrels and is producing 225 barrels of water, that is with a ratio of 11.25 to one, the new allowable would be $\frac{20 \times 10}{11.25}$ or 18 barrels of oil per day. The water saved to the reservoir would be 25 barrels per day. If the allowable of a well is 20 barrels and is producing 275 barrels of water, or with a ratio of 13.75 to one the new allowable would be about 15 barrels per day, and the water saved would equal 75 barrels per day. If a well has an allowable of 20 barrels and is producing 400 barrels per day, the water saved would be 200 barrels per day.

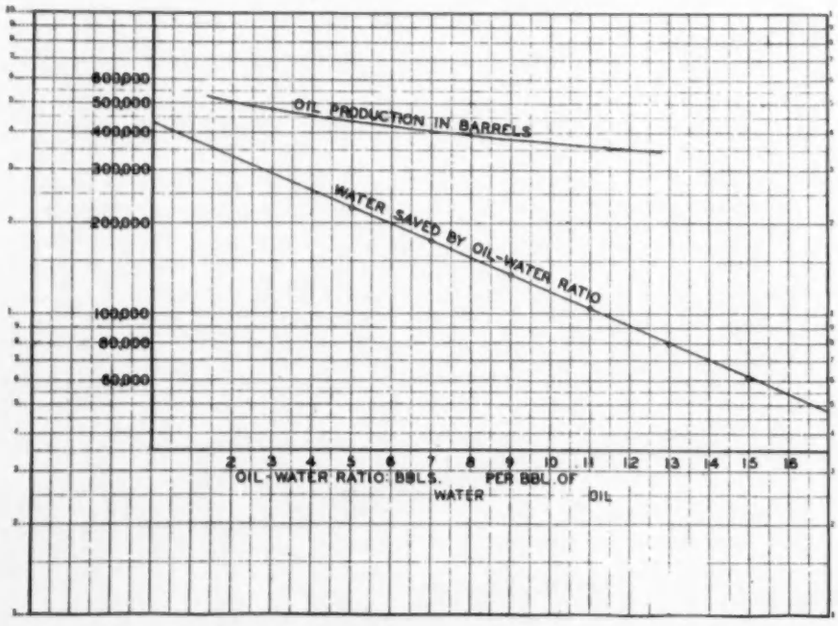
If a well has an allowable of 18 barrels per day and is producing 360 barrels of water per day or with a ratio of 20 to 1, then the new allowable would be $\frac{20 \times 10}{20}$ or 10 barrels per day. The water saved would be 160 barrels per day.

Another example is, if a well is producing 10 barrels of oil and 400 barrels of water, or with a ratio of 40 to 1, the new allowable would be $\frac{20 \times 10}{40}$ or 5 barrels per day. The water saved would be 200 barrels per day.

Any water returning to the producing horizon is credited to the operator. He is charged only with the water not returning to the reservoir.

The commission also allows a bonus of 1 extra barrel of oil as a reward for reinjecting every 100 barrels of water. This more than pays the cost.

If an operator has one well producing a great deal of water and another well that does not produce so much water, he can close in the high-water-ratio well and produce his allowable from the well that does not make so much water.




**The effect of the new water-oil ratio order for East Texas is indicated by the above chart. The upper curve represents barrels of oil, and the lower curve represents the amount of water saved as the water production is reduced.**

**Thus to produce 500,000 barrels of oil, the water-oil ratio would have to be cut to 2 barrels of water to 1 of oil. At that ratio the water saved would amount to about 325,000 barrels.**

**With the 10-to-1 ratio provided in the current order (temporarily held in abeyance), the Texas Railroad Commission expects to produce about 365,000 barrels of oil and save 125,000 barrels of water.**

### Stanolind Enlarges North Texas Looping Program

Stanolind Pipe Line Company is enlarging its pipe line looping program in North Texas to provide facilities for the movement of 40,000 barrels of sweet oil daily from Gulf Coast and East Texas areas to Midwestern refineries. Company has completed a 37-mile 12-inch loop, extending north from Bowie to Nocona Station, supplementing a single 8-inch and an 8-inch loop from Rogers to Nocona Station. Construction crew is at work on a 24½-mile 12-inch loop, extending north from Graford Station to Jacksboro Junction, or Trinity River, parallel to an 8-inch screw line, which will be salvaged and dethreaded for the laying of a 24½-mile welded 8-inch loop from Jacksboro Junction to Bowie Station. Company has an 8-inch sour oil line, extending from Ranger, where 8000 barrels of West Texas oil is delivered daily by Humble Pipe Line Company, that parallels the above multi-unit system from Graford Station to Oklahoma.

Subject to approval by federal authorities, Stanolind Pipe Line Company proposes to install an aggregate of 76 miles of 8-inch loops between Mexia and Graford stations, using pipe to be salvaged.

### Sinclair Completes South Texas Pipe Line

Sinclair Refining Company, pipe line division, has completed its 150-mile 8-inch crude carrier that extends from Corpus Christi terminal and tank farm to Damon Mound, where connection is made with an old 8-inch that delivers to Sinclair's refinery at Sinco, near Houston. The movement of mixed grades of high gravity oil from numerous fields in the Corpus Christi district is slated to begin early this week. Two of the trio of new stations are complete and the other will be in service by end of month. This line will have a capacity of 20,000 to 22,000 barrels daily.

### Buffalo Oil Buys Dunning Properties

Properties of the William H. Dunning, Jr., Estate, Fort Worth, in the East Texas field and West Texas, have been purchased, subject to probate court approval, by Buffalo Oil Company, Dallas, for $960,000 cash. Sealed bids were submitted December 28 by a quartet of prospective buyers. The East Texas field property involves one-half interest in a 25.43-acre lease with 8 flowing wells. In West Texas, the purchaser acquires 1040 acres with 25 flowing wells in the Goldsmith field, a single producer on 40 acres in the Keystone field; one-half interest in 4 wells on an 80-acre lease in Goldsmith field, and lease on an aggregate of 11,595 acres of wildcat acreage.

### Refinery Quits

Danube Refining Company has discontinued operation of its 1200-barrel refinery near Borger, Texas, after being in service 6¼ years. The plant originally was rated at 500 barrels daily, and the capacity was stepped up as local sales increased. It was averaging 900 barrels daily throughput when officials issued the shutdown order due to scarcity of experienced workmen and nominal profits.

## Runs to Stills Reduced; Fuel Stocks Cut Sharply

Latest statistics of the industry, covering the week ended December 26 were distinctly unfavorable, having reflected further heavy withdrawals of both light and heavy fuel oils from already inadequate storage, while there was again an addition of unneeded gasoline to stocks. These results occurred partially because of failure of refiners to adjust yields of the several major products to the demand for them, but also importantly responsible was the comparatively large reduction of crude runs to stills. The plants of the country charged to stills 142,000 barrels per day less than in the previous week and 14 percent less than in the corresponding week a year ago.

Continued cold weather caused withdrawal of 2,081,000 barrels of gas oil and distillate fuel from storage, following the previous week's draft of 1,914,000 barrels. On December 27, therefore, the stocks stood at 43,799,000 barrels—nearly 7,000,000 barrels or 13 percent under the level of 50,521,000 at which they were on December 27, 1941. In the final week of December a year ago, only about 1,000,000 barrels of the light fuel oils came from storage.

United States stocks of residual fuel oil were reduced 1,243,000 barrels in the week ended December 26, whereas in the corresponding week a year ago they were increased over 300,000 barrels. As of December 26, the total inventories of the heavy fuels amounted to 72,962,000 barrels. They were 23,000,000 barrels (24 percent) lower than on December 27 last year.

The national inventory of finished and unfinished gasoline rose in the week of December 26 from 79,131,000 to 80,228,000 barrels, an increase of 1,097,000 barrels. While the increase was not necessary, with consumption sharply curtailed, it was at least materially smaller than that in the like week last year, when about 2,000,000 barrels of gasoline went to storage. At the 80,228,000-barrel level, gasoline stocks were 11,251,000 barrels (12.2 percent) less than on December 27 a year ago. This decrease from a year ago was not fully in line with the decline meanwhile in demand for gasoline, the requirements lately having been around 17 percent under the year-ago trend.

Crude runs to stills averaged 3,525,000 barrels daily in the week ended December 26, lowest since late-spring and early summer. The runs were 142,000 barrels a day lower than in the previous week and 571,000 barrels per day (13.9 percent) lower than in the corresponding week a year ago, when they averaged 4,096,000 barrels daily.

Crude oil production for the week of December 26 averaged 3,881,000 barrels per day, down 11,000 from the previous week and 200,000 barrels (5 percent) under a year before.

Latest figures on crude oil stocks are for the week ended December 19, during which there was at least a temporary reversal of the former persistent decline. The stocks were increased, according to the Bureau of Mines, from 231,896,000 to 232,457,000 barrels, an increase of 561,000 barrels. However, they then were 11,160,000 barrels (4.5 percent) under the total of 243,617,000 barrels reported a year earlier, and still were within about 3,000,000 barrels of the 20-year low reached in late 1939 after Mid-Continent oil fields had been shut down upon announcement of crude price reductions.

## Shortages of Fuel Oils Feature Tight Markets

Markets remain generally tight, with the shortage of light fuel oils increasingly acute as cold weather continues, while there has been no lifting of the need to draw further on the ever-dwindling stocks of heavy fuel oil.

On the East Coast practically all suppliers are in need of more materials than they can obtain. The supplies of heavy, industrial grade fuel oils are particularly short, being in more urgent demand than the lighter, heating oils, although the latter too are scarce.

In the Middle West, there is almost as tight a market as in the East, as transportation difficulties combine with shortages of materials at refineries to result in many deliveries being delayed

### Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

| STATE OR DISTRICT | *State Allowable of Crude Production | PRODUCTION IN WEEK ENDED Dec. 26 | Jan. 2 |
|---|---|---|---|
| Arkansas | 74,885 | 73,700 | 73,600 |
| California | 771,100 | 790,200 | 770,000 |
| Long Beach | | 33,300 | 33,500 |
| Midway-Sunset | | 56,200 | 54,900 |
| Kettleman Hills | | 44,900 | 43,400 |
| Wilmington | | 96,500 | 93,200 |
| Rest of State | | 559,300 | 545,000 |
| Colorado | | 6,700 | 6,700 |
| Illinois | | 246,350 | 247,150 |
| Salem | | 31,600 | 31,700 |
| Louden | | 42,900 | 41,250 |
| Other New Pools | | 160,100 | 162,400 |
| Old Pools | | 11,750 | 11,800 |
| Indiana | | 16,300 | 16,350 |
| Kansas | 295,500 | 291,500 | 288,350 |
| Kentucky | | 12,050 | 12,000 |
| Louisiana | 300,100 | 316,850 | 316,100 |
| North | | 92,850 | 92,800 |
| South | | 224,000 | 223,300 |
| Michigan | 63,675 | 60,400 | 59,950 |
| Mississippi | | 57,800 | 58,150 |
| Missouri | | 100 | 100 |
| Montana | | 19,850 | 21,800 |
| Nebraska | | 2,900 | 2,950 |
| New Mexico | 93,700 | 94,400 | 93,450 |
| New York | | 13,200 | 13,050 |
| Ohio | | 9,250 | 9,100 |
| Oklahoma | 373,900 | 354,250 | 354,000 |
| Oklahoma City | | 62,850 | 62,500 |
| Seminole Area | | 83,700 | 81,650 |
| Rest of State | | 207,000 | 209,850 |
| Pennsylvania | | 48,900 | 49,000 |
| Tennessee | | 35 | 35 |
| Texas | 1,372,859 | 1,393,200 | 1,377,700 |
| Upper Gulf Coast | | 314,050 | 311,500 |
| East Texas Field | | 358,850 | 350,850 |
| Rest of Eastern Texas | | 101,750 | 101,550 |
| Lower Gulf Coast | | 107,100 | 110,600 |
| Southwest Texas | | 50,150 | 49,800 |
| South Central Texas | | 17,950 | 17,350 |
| West Texas | | 209,650 | 206,900 |
| North Texas | | 140,200 | 138,750 |
| Panhandle | | 93,500 | 90,400 |
| Utah | | 10 | 10 |
| West Virginia | | 8,950 | 9,850 |
| Wyoming | | 93,300 | 93,950 |
| Total 8 Prorated States | 3,345,719 | 3,374,500 | 3,333,150 |
| Total United States | | 3,910,195 | 3,873,345 |

* Details on state allowables in The Oil Weekly of Dec. 7, 1942, page 52.

### Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

| ITEM | Crude Oil Prod. Bbls. Day (Add 000) | Week Ended | Runs to Stills Bbls. Day (Add 000) | Week Ended | Crude Stocks Bbls. (Add 000) | Week Ended | Gasoline Stocks Bbls. (Add 000) | Week Ended | Gas Oil & Distillate Stocks Bbls. (Add 000) | Week Ended | Residual Fuel Oil Stocks Bbls. (Add 000) | Week Ended |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Highs:** | | | | | | | | | | | | |
| 1939 | 3,910 | 8- 5 | 3,650 | 10-21 | 278,607 | 5-26 | 87,769 | 4-22 | 39,562 | 10-28 | 116,237 | 8-26 |
| 1940 | 3,890 | 3-16 | 3,690 | 6-22 | 265,865 | 8-31 | 102,817 | 4-20 | 49,051 | 10-19 | 109,135 | 9-14 |
| 1941 | 4,337 | 11-22 | [1]4,120 | 10-18 | 266,187 | 3-29 | 99,727 | 3-29 | [1]54,983 | 11-15 | 102,448 | 1- 4 |
| 1942 | [1]4,337 | 2- 7 | 3,961 | 1- 3 | 263,208 | 3-28 | [1]107,229 | 3-14 | 49,861 | 11-14 | 95,857 | 1- 3 |
| **Lows:** | | | | | | | | | | | | |
| 1939 | [3]1,601 | 8-26 | 3,125 | 2-18 | [2]229,127 | 10-12 | 71,152 | 10- 7 | 20,722 | 4-15 | 105,397 | 4- 8 |
| 1940 | 3,335 | 11-30 | 3,370 | 1- 6 | 237,339 | 1-27 | 79,847 | 11- 9 | 23,551 | 4- 6 | 102,344 | 2-10 |
| 1941 | 3,364 | 1-11 | 3,490 | 1-18 | 240,399 | 11-15 | 79,923 | 10- 4 | 28,381 | 4-12 | 90,914 | 7-12 |
| 1942 | 3,297 | 7- 4 | 3,393 | 5-23 | 231,896 | 12-12 | 75,934 | 12- 5 | 29,240 | 4-25 | 72,962 | 12-26 |
| **Trends in 1942 Week Ended):** | | | | | | | | | | | | |
| Jan. 3 | 4,038 | ..... | 3,961 | ..... | 244,440 | ..... | 92,987 | ..... | 49,357 | ..... | 95,857 | ..... |
| Jan. 31 | 3,871 | ..... | 3,848 | ..... | 250,740 | ..... | 97,810 | ..... | 40,674 | ..... | 91,189 | ..... |
| Feb. 28 | 4,016 | ..... | 3,675 | ..... | 259,373 | ..... | 105,635 | ..... | 34,547 | ..... | 88,285 | ..... |
| Mar. 28 | 3,820 | ..... | 3,667 | ..... | 263,208 | ..... | 105,624 | ..... | 31,756 | ..... | 83,045 | ..... |
| April 25 | 3,581 | ..... | 3,506 | ..... | 257,073 | ..... | 102,897 | ..... | 29,240 | ..... | 81,107 | ..... |
| May 30 | 3,877 | ..... | 3,522 | ..... | 255,023 | ..... | 95,355 | ..... | 31,384 | ..... | 79,628 | ..... |
| June 27 | 3,719 | ..... | 3,581 | ..... | 253,364 | ..... | 88,396 | ..... | 32,851 | ..... | 77,304 | ..... |
| July 25 | 3,691 | ..... | 3,658 | ..... | 249,262 | ..... | 82,281 | ..... | 35,966 | ..... | 77,816 | ..... |
| August 29 | 3,964 | ..... | 3,697 | ..... | 249,007 | ..... | 80,831 | ..... | 42,060 | ..... | 78,034 | ..... |
| September 26 | 3,909 | ..... | 3,802 | ..... | 242,785 | ..... | 80,550 | ..... | 45,945 | ..... | 78,943 | ..... |
| October 31 | 3,901 | ..... | 3,731 | ..... | 239,266 | ..... | 79,159 | ..... | 48,131 | ..... | 79,166 | ..... |
| November 28 | 3,878 | ..... | 3,736 | ..... | 234,850 | ..... | 78,854 | ..... | 49,739 | ..... | 77,796 | ..... |
| December 5 | 3,834 | ..... | 3,760 | ..... | 232,982 | ..... | 75,934 | ..... | 48,663 | ..... | 75,219 | ..... |
| December 12 | 3,881 | ..... | 3,744 | ..... | 231,896 | ..... | 77,622 | ..... | 47,794 | ..... | 74,785 | ..... |
| December 19 | 3,892 | ..... | 3,667 | ..... | 232,457 | ..... | 79,131 | ..... | 45,880 | ..... | 74,205 | ..... |
| **Dec. 26, 1942** | **3,881** | ..... | **3,525** | ..... | ..... | ..... | **80,228** | ..... | **43,799** | ..... | **72,962** | ..... |
| Dec. 27, 1941 | 4,081 | ..... | 4,096 | ..... | [4]243,617 | ..... | 91,479 | ..... | 50,521 | ..... | 95,891 | ..... |
| **Change:** | | | | | | | | | | | | |
| In week | —11 | ..... | —142 | ..... | +561 | ..... | +1,097 | ..... | —2,081 | ..... | —1,243 | ..... |
| In year | —200 | ..... | —571 | ..... | —11,160 | ..... | —11,251 | ..... | —6,722 | ..... | —22,929 | ..... |
| In year | —4.9% | ..... | —13.9% | ..... | —4.5% | ..... | —12.2% | ..... | —13.3% | ..... | —23.9% | ..... |

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, December 20, 1941.

and in the inability to accept orders. Especially acute is the scarcity of heavy-fuel oils.

Mid-Continent refiners report more difficulties in connection with obtaining adequate transportation than in providing materials, although supplies of some products are scarce. As in the Middle West and East, demand for heavy fuel oil is much in excess of supply.

On the Gulf Coast, gasoline is available in larger quantities than needed, but refiners find somewhat improved demand for fuel oils, in reflection of the increasingly acute shortages in the East and Middle West. However, inadequate transportation still stands in the way of sales of all products.

Still in the limelight in the Western Pennsylvanian market are the neutral oils—because of their continued weakness, in the face of strong markets for virtually all other products. However, refiners in most instances feel that it will not be necessary to lower quotations; that the neutrals have emerged into a fundamentally stronger position.

## Crude Production Down; Most States Decline

United States crude-oil production averaged 3,873,345 barrels daily in the week ended January 2. The output was 36,850 barrels per day lower than in the previous week.

The 8 prorated states, accounting for about 87 percent of the nation's crude production, underproduced their combined allowables by 12,569 barrels per day in averaging together 3,333,150 barrels daily. In those states, production was about 40,000 barrels a day lower than in the previous week.

California declined from 790,200 barrels daily in the week ended December 26 to 770,000 in the week of January 2, Arkansas from 73,700 to 73,600, Kansas from 291,500 to 288,350, Louisiana from 316,850 to 316,100, Michigan from 60,400 to 59,950, New Mexico from 94,400 to 93,450, Oklahoma from 354,250 to 354,000, Texas from 1,393,200 to 1,377,700. Illinois increased from 246,350 to 247,150, Montana from 19,850 to 21,800, Wyoming from 93,300 to 93,950.

## Natural Gasoline Stocks Declined in October

October production of natural gasoline and allied products reached an average of 9,831,000 gallons daily, from 9,797,000 in September, with total output for the month of 304,752,000 gallons against 293,916 000 gallons, it is shown by the monthly report of the Bureau of Mines.

The most outstanding gains, the bureau said, occurred in Illinois, West Virginia and the Texas Gulf area.

Included in the month's production were 180,390,000 gallons of natural gasoline, against 173 250,000 gallons in September; 57,078.000 gallons of cycle products against 54.978,000 gallons; 10,626,000 gallons of iso-butane at natural gasoline and cycle plants against 9,324,000 gallons; 56.658,000 gallons of liquefied petroleum gases at natural gasoline and cycle plants against 56,364.000 gallons, and 13,272,000 gallons of liquefied refinery gas at refineries against 17,010,000 gallons.

Demand totaled 345,786,000 gallons against 324,786.000 in September, with 229,110,000 gallons used at refineries against 214,636,000 gallons; 31,164,000 gallons of natural gasoline and cycle condensate to jobbers and retail outlets against 33,138,000 gallons; 42,336,000 gallons of liquefied petroleum gas to jobbers and retail outlets against 40,530,000 gallons, and exports and losses of 43,176,000 gallons against 36,582,000 gallons.

Stocks continued to decline, those at plants and terminals dropping from 144,984,000 to 135,786,000 gallons and those at refineries from 109,368.000 to 92,022,000 gallons, the report stated.

## Salary Limit Regulation Made Clear—Like Mud

The maximum salary any employe in the oil industry may receive next year was fixed at $67,200 in regulations issued by the Treasury Department for administration of President Roosevelt's salary-limitation order.

Federal income taxes on that sum, amounting to $42,200, would yield the $25,000 which the President set as the maximum, but in actual practice the exact yield will depend on several factors, since the basic allowance fixed by the department remains the same regardless of whether the employe is married or single; the number of dependents, if any; the nature or amount of other income (taxable or exempt, or by the extent of the deductions allowable for tax purposes generally.

Additional salary will be permitted for any expenses paid or incurred by an employe which are ordinary and necessary for the performance of the services for which he is employed, provided such expenses are deductible in computing individual federal income taxes.

The salary control applies to all persons having an employe relationship—an officer of a corporation is an employe, but a director as such is not; the term "salary" includes compensation on any basis, including commissions, fees, bonuses, gifts, loans, etc.

To take care of "hardship" cases, the regulations provide that additional salary may be paid to permit an employe to maintain his customary charitable contributions where it can be shown that he could not continue them even after resorting to any other income he might have, without undue hardship.

Additional salary also will be permitted to cover life insurance premiums and payments on fixed obligations which were in effect October 3, 1942, where the employe, after resorting to all other income, is unable to meet such payments without disposing of assets at a substantial financial loss resulting in undue hardship.

The regulations held, however, that substantial financial loss is not necessarily confined to a loss suffered on disposition of assets at depressed prices substantially below cost of the employe, but the present value in use or in production of income and the potential future value are factors to be considered.

Additional salary may further be permitted to an employe to enable him to meet part or all of his federal income taxes on 1942 salary, under the same conditions as apply to insurance and debt payments, and in 1944 additional salary may be allowable to meet the payment of federal income tax on the allowance permitted for 1943 for charitable, insurance, debt and tax payments, but no amount will be allowable to meet the payment of tax due on the basic allowable salary itself.

Where a person works for more than one employer, all his employers are required to adjust the salaries paid him so that he does not receive more than the basic allowable, and both the individual and his employers will be deemed to be acting in contravention of the act and regulations if proper salary arrangements are not made.

The limitations on salaries are not affected by any community property laws and in states having such laws employes are to be considered as receiving the full amount of salary paid them, and not merely the half which is theirs under the state law.

The restrictions will not apply to persons working in foreign countries for American employers.

The regulations also cover other salary payments in excess of $5000 a year and salaries of lesser amount paid employes in bona fide executive, administrative or professional capacities who are not represented by labor organizations, in these instances outlining methods for securing approval of increases or decreases of salaries.

Both employer and employe are made responsible for violations of the act, and may be penalized by a fine of not exceeding $1000 or imprisonment for not more than one year, or both. In addition, in the case of violative salaries, the full amount of salary paid, and not merely the amount in violation, may be disregarded in determining costs or expenses of the employer for the purpose of fixing maximum prices; in calculating deductions in income returns or in determining costs or expenses under government contracts.

The regulations will apply to all salaries paid or accrued after December 31, irrespective of when payment or accrual of such salary was authorized and irrespective, also, of any contract or agreement made prior to or after such date.

## Boyle Sells Properties In Southwest Texas

W. Stewart Boyle, active producer and wildcatter of Houston, has sold 17 oil and gas wells and more than 1000 acres in leases to Morris Raush, Louis Pulaski, Harry Pulaski and H. M. Cohen of Houston. The deal is reported to have involved approximately $400,000 in cash with Boyle retaining an overriding royalty.

The deal included wells and leases in the Mauritz, South Mauritz, Mayo, Navidad, Stewart, West Ranch, Hoffman fields—all in Southwest Texas. Boyle has three wells drilling in Jackson County and two in Gonzales County. He is reported to be negotiating with other interests for the sale of additional property in Jackson County which will involve approximately $250,000.

## Court Rules Against Madison Trial Damages

Suit brought by Farmers Cooperative Oil Company against 9 major oil companies, in which thribble damages arising out of the five-year-old Madison oil trust trials, has been dismissed by the Eighth United States Circuit Court of Appeals in St. Louis. This action upholds decision of a lower court.

# Gravity-Scale Crude Oil Prices in Mid-Continent Fields

**Posted in most instances between May 19 and May 21, 1941**

| GRAVITY | Oklahoma-Kansas | | North Louisiana-Arkansas | | | | | Inland Texas and New Mexico | | | South Texas | | Texas Gulf Coast | | | Louisiana Gulf Coast | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stanolind, Gulf, Texas, Skelly, Barnsdall, Tidewater, Sinclair, Phillips | Carter, Magnolia, Shell | [1]Rodessa, etc. | [2]Champagnolle, etc. | Bunkie, Eola, Olla, (by Standard) | Lisbon, La (by Gulf) | [3]Atlanta, Buckner, etc., Ark. | North and West Central Texas | [4]Eastern Texas | West Texas, [17]Panhandle, New Mexico | [5]Refugio Type | [6]Mirando Type | [7]Gulf Coast | [8]Anahuac Type | [9]Dickinson Type | [10]Gulf Coast | [11]Standard of La. | [12]Texas Co. | [13]Texas Co. | [14]Magnolia Pet. Co. | [15]Shell Oil Co. | Jennings (by Gulf) | [16]Rocky Mt. Area (Salt Creek, etc.) |
| 17–17.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | $0.94 | .... | .... | .... |
| 18–18.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .96 | .... | .... | .... |
| 19–19.9 | .... | .... | .... | .... | .... | .... | .... | .... | $0.80 | $0.70 | $1.08 | $1.03 | $1.06 | $0.98 | $0.93 | $1.06 | .... | .... | .... | .98 | $0.99 | .... | .... |
| 20–20.9 | $0.85 | $0.75 | .... | .... | .... | .... | $0.68 | $0.81 | .82 | .72 | 1.10 | 1.05 | 1.08 | 1.00 | .95 | 1.08 | $0.90 | .... | .... | 1.00 | 1.01 | .... | .... |
| 21–21.9 | .87 | .78 | .... | .... | .... | .... | .70 | .83 | .84 | .74 | 1.12 | 1.07 | 1.10 | 1.02 | .97 | 1.10 | .92 | .... | .... | 1.02 | 1.03 | .... | .... |
| 22–22.9 | .89 | .81 | .... | .... | .... | .... | .72 | .85 | .86 | .76 | 1.14 | 1.09 | 1.12 | 1.04 | .99 | 1.12 | .94 | .... | .... | 1.05 | 1.05 | .... | .... |
| 23–23.9 | .91 | .84 | .... | .... | .... | .... | .74 | .87 | .88 | .78 | 1.16 | 1.11 | 1.14 | 1.06 | 1.01 | 1.14 | .96 | .... | .... | 1.08 | 1.07 | .... | .... |
| 24–24.9 | .93 | .87 | $0.88 | $0.86 | $0.98 | .... | .76 | .89 | .90 | .80 | 1.18 | 1.13 | 1.16 | 1.08 | 1.03 | 1.16 | .98 | .... | .... | 1.11 | 1.09 | .... | .... |
| 25–25.9 | .95 | .90 | .90 | .88 | 1.00 | .... | 78 | 91 | .97 / .92 | .82 | 1.20 | 1.15 | 1.18 | 1.10 | 1.05 | 1.18 | 1.00 | .... | .... | 1.14 | 1.11 | .... | .... |
| 26–26.9 | .97 | .93 | .92 | .90 | 1.02 | .... | .80 | .93 | .99 | .84 | 1.22 | 1.17 | 1.20 | 1.12 | 1.07 | 1.20 | 1.02 | .... | .... | 1.17 | 1.13 | .... | .... |
| 27–27.9 | .99 | .96 | .94 | .92 | 1.04 | $0.81 | .82 | .95 | 1.01 | .86 | 1.24 | 1.19 | 1.22 | 1.14 | 1.09 | 1.22 | 1.04 | .... | .... | 1.19 | 1.15 | .... | .... |
| 28–28.9 | 1.01 | .99 | .96 | .94 | 1.06 | .83 | .84 | .97 | 1.03 | .88 | 1.26 | 1.21 | 1.24 | 1.16 | 1.11 | 1.24 | 1.06 | $1.06 | .... | 1.21 | 1.17 | .... | $0.96 |
| 29–29.9 | 1.03 | 1.02 | .98 | .96 | 1.08 | .85 | .86 | .99 | 1.05 | .90 | 1.28 | 1.23 | 1.26 | 1.18 | 1.13 | 1.26 | 1.08 | 1.08 | .... | 1.23 | 1.19 | .... | .98 |
| 30–30.9 | 1.05 | 1.05 | 1.00 | .98 | 1.10 | .87 | .88 | 1.01 | 1.07 | .92 | 1.30 | 1.25 | 1.28 | 1.20 | 1.15 | 1.28 | 1.10 | 1.10 | $1.05 | 1.25 | 1.21 | .... | 1.00 |
| 31–31.9 | 1.07 | 1.07 | 1.02 | 1.00 | 1.12 | .89 | .90 | 1.03 | 1.09 | .94 | 1.32 | 1.27 | 1.30 | 1.22 | 1.17 | 1.30 | 1.12 | 1.12 | 1.07 | 1.27 | 1.23 | $1.07 | 1.02 |
| 32–32.9 | 1.09 | 1.09 | 1.04 | 1.02 | 1.14 | .91 | .92 | 1.05 | 1.11 | .96 | 1.34 | 1.29 | 1.32 | 1.24 | 1.19 | 1.32 | 1.14 | 1.14 | 1.09 | 1.29 | 1.25 | 1.09 | 1.04 |
| 33–33.9 | 1.11 | 1.11 | 1.06 | 1.04 | 1.16 | .93 | .94 | 1.07 | 1.13 | .98 | 1.36 | 1.31 | 1.34 | 1.26 | 1.21 | 1.34 | 1.16 | 1.16 | 1.11 | 1.31 | 1.27 | 1.11 | 1.06 |
| 34–34.9 | 1.13 | 1.13 | 1.08 | 1.06 | 1.18 | .95 | .96 | 1.09 | 1.15 | 1.00 | 1.38 | 1.33 | 1.36 | 1.28 | 1.23 | 1.36 | 1.18 | 1.18 | 1.13 | 1.33 | 1.29 | 1.13 | 1.08 |
| 35–35.9 | 1.15 | 1.15 | 1.10 | 1.08 | 1.20 | .97 | .98 | 1.11 | 1.17 | 1.02 | 1.40 | 1.35 | 1.38 | 1.30 | 1.25 | 1.38 | 1.20 | 1.20 | 1.15 | .... | .... | 1.15 | 1.10 |
| 36–36.9 | 1.17 | 1.17 | 1.12 | 1.10 | 1.22 | .... | 1.00 | 1.13 | 1.19 | 1.04 | 1.42 | 1.37 | 1.40 | 1.32 | 1.27 | 1.40 | 1.22 | 1.22 | 1.17 | .... | .... | 1.17 | 1.12 |
| 37–37.9 | 1.19 | 1.19 | 1.14 | 1.12 | 1.24 | .... | 1.02 | 1.15 | 1.21 | 1.06 | 1.44 | 1.39 | 1.42 | 1.34 | 1.29 | 1.42 | 1.24 | .... | 1.19 | .... | .... | 1.19 | 1.14 |
| 38–38.9 | 1.21 | 1.21 | 1.16 | 1.14 | 1.26 | .... | 1.04 | 1.17 | 1.23 | 1.08 | 1.46 | 1.41 | 1.44 | 1.36 | 1.31 | 1.44 | 1.26 | .... | 1.21 | .... | .... | 1.21 | 1.16 |
| 39–39.9 | 1.23 | 1.23 | 1.18 | 1.16 | 1.28 | .... | 1.06 | 1.19 | 1.25 | 1.10 | 1.48 | 1.43 | 1.46 | 1.38 | 1.33 | 1.46 | 1.28 | .... | 1.23 | .... | .... | 1.23 | 1.18 |
| 40 & Up | 1.25 | 1.25 | 1.20 | 1.18 | 1.30 | .... | 1.08 | 1.21 | 1.27 | 1.12 | 1.50 | 1.45 | 1.48 | 1.40 | 1.35 | 1.48 | 1.30 | .... | 1.25 | .... | .... | 1.25 | 1.20 |

[1] Gulf schedule for Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, El Dorado and Rodessa, Texas. Standard of La. schedule for Cotton Valley, Rodessa, Shreveport (Cross Lake), and Caddo. Magnolia schedule for Haynesville, Cotton Valley, Rodessa, and Miller Co., Ark. Texas Co. schedule for "North Louisiana."

[2] Schedule of Standard of La. for De Soto, Sabine, Fouke, Homer, Miller Co., Sugar Creek. Schedule of Root Petroleum Co. for Nick Springs, Urbana light, Schuler sweet, Rainbow, South Field (El Dorado), and Champagnolle.

[3] Schedule of Standard of La. for Atlanta, Buckner, Magnolia, Schuler: Jones sand, Village. Schedule of Root Petroleum Co. for Schuler: Reynolds lime, and Schuler: Jones sand.

[4] Humble schedule for Anderson, Cherokee, Limestone, and Navarro counties and Navarro Crossing field, except that prices from 80 to 92 cents represent postings only for Hawkins field, Wood County. Rodessa, Texas, prices are same as in Rodessa, La.-Ark.

[5] Schedule for Refugio, E. White Point, Greta, Melon Creek, Midway, Minnie Bock, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

[6] Schedule for Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (N. and S.), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

[7] Humble schedule for Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa new, Raccoon Bend, South Thompsons, Sugarland, Thompsons, Webster. Texas Co. schedule for Arioia, Ganado, Hamman, Hillie, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, Withers; except that schedule provides $1.36 top, 34 gravity. Pan American Prod. Co. schedule for Hastings and South Houston. Gulf schedule for Spindle Top, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompsons, Lochridge, Dyersdale, and Hull (old) crudes. Sun schedule for Barbers Hill, Batson old, Cotton Lake, Esperson below 35 gravity, Goose Creek, Greens Lake, Hull below 25, Humble below 35, Nome, North Dayton below 25, Orange, Saratoga, Sour Lake, South Liberty.

[8] Humble schedule for Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull old and new, Pierce Junction, Red Fish Reef, Turtle Bay fields. Sun schedule for Anahuac, Caplen, and Turtle Bay. Gulf schedule for Anahuac, Hull new, Pierce Junction, Orange and Thompsons deep.

[9] Humble schedule for Dickinson, Gillock, Hardin, League City, and Rowan fields. Pan American Prod. Co. schedule for Gillock crude.

[10] Sun Oil Co. schedule for Bayou Blue, Chacahoula, Fausse Pointe, Hackberry (E. and W.), and Vinton. Texas Co. schedule for Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville and Port Barre for crude ranging in gravity up to 27-27.9; for lighter oils in those fields see Footnote 12. Gulf schedule for Edgerly, Starks, Vinton, E. Hackberry, Cameron Meadows, Leesville. Deduct 10 cents for Gulf's prices for Timbalier Bay, Grand Bay, Quarantine Bay, and West Bay. Deduct 2 cents for Standard of La. prices for University (Baton Rouge) crude of 30 to 35.9 gravity.

[11] Standard of La. schedule for Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, N. Crowley, S. Crowley, Port Barre, Potash, Roanoke, St. Martinville. Deduct 10 cents for Anse La Butte.

[12] Texas Co. schedule for Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club. Add 8 cents to these prices for Texas Co. postings for 28 or higher gravity at Bay St. Elaine, Caillou Island, Iberia, Lake Pelto, Leesville, Port Barre, and Lake Barre.

[13] Texas Co. schedule for Delta Farms, Golden Meadows, Lake Salvador.

[14] Magnolia schedule for Lockport, Cameron Meadows, West Gueydan.

[15] Shell Oil Co. schedule at Iowa, Black Bayou, White Castle. For Shell's prices at Roanoke and Chalkley fields deduct 5 cents. For Shell's prices at Gibson, South Houma, Hester, and West Lake Verret fields deduct 10 cents.

[16] Sinclair-Wyoming Oil Co. prices at Salt Creek, Lost Soldier, Iron Creek, effective May 20, 1941. Deduct 10 cents for East Mahoney and deduct 20 cents for Mahoney and Wertz.

[17] Add 3 cents for Panhandle prices.

## MID-CONTINENT FLAT PRICES

| FIELD— | Flat Price | Date Posted |
|---|---|---|
| **Arkansas:** | | |
| Big Crk., McKamie sour dist'l. | $1.15 | 5–22–41 |
| Dorcheat, Macedonia dist'l. | 1.30 | 11–16–42 |
| Smackover, Heavy | .83 | 5–22–41 |
| **Louisiana, North:** | | |
| Cotton Valley Distillate | 1.30 | 5–22–41 |
| Cotton Valley (Holloway sn.) | 1.25 | 5–22–41 |
| Lisbon Distillate | 1.20 | 5–22–41 |
| Urania | 1.15 | 5–22–42 |
| **Louisiana, South:** | | |
| Erath | 1.21 | 5–21–41 |
| Garden Island | 1.36 | 5–21–41 |
| Happytown | 1.15 | 5–20–41 |
| Lafitte, Paradis | 1.19 | 5–21–41 |
| Lake Arthur & Tepetate | 1.18 | 5–21–41 |
| Lake Mongoulois | 1.36 | 5–21–41 |
| Ville Platte | 1.20 | 5–21–41 |
| **Nebraska:** | | |
| Falls City, in field | .90 | 8– 1–41 |
| Falls City, in tank cars | .95 | 8– 1–41 |
| Shubert, in tank cars | .97 | 8– 1–41 |
| **Texas:** | | |
| Alice, Benavides (No. Sweden), Ben Bolt, Clark-Muil, Sun and Tom Graham | 1.35 | 5–21–41 |
| Cayuga | .90 | 5–21–41 |
| Chapel Hill 50° and up | 1.25 | 3–19–42 |
| Chapel Hill below 50° | 1.18 | 1–20–42 |
| Clay Creek | 1.00 | 5–22–41 |
| Cleveland | 1.26 | 5–21–41 |
| Conroe | 1.43 | 5–21–41 |
| Esperson 35° & up; S. Esperson (Sun Oil) | 1.30 | 5–22–41 |
| East Texas, Flag Lake | 1.25 | 5–20–41 |
| Flour Bluff, East Flour Bluff, and La Rosa | 1.33 | 5–21–41 |
| Hockley-Cochran Counties | .87 | 5–21–41 |
| Livingston, Cleveland | 1.25 | 5–20–41 |
| Long Lake | 1.23 | 5–21–41 |
| Luling | 1.05 | 5–21–41 |
| Lytton Springs | 1.17 | 5–21–41 |
| North Rincon | 1.35 | 5–22–41 |
| Salt Flat, North Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski | 1.14 | 5–21–41 |
| Satsuma, Tomball | 1.40 | 5–21–41 |
| Sun Oil Co. at Batson (new), Fig Ridge, Hardin, Hull 25 and up, Humble 35 and up, LaBelle, N. Dayton 25 and up, Oyster Bayou, Seabreeze, S. China, W. Orange and Willow Slough | 1.25 | 5–22–41 |
| South Cotton Lake | 1.35 | 5–22–41 |
| Sun, N. Sun, N. Rincon, Garcia | 1.35 | 5–22–41 |
| Talco | .79 | 5–21–41 |
| Van | 1.08 | 5–21–41 |
| Yates (Deep) | .95 | 5–20–41 |
| Yates (Shallow) | .82 | 5–20–41 |
| Yturria (Sun in S. Texas) | .... | .... |

## MICHIGAN PRICES

| | | |
|---|---|---|
| **Central (Basin):** | | |
| Porter, Greendale, Crystal, Wise, Midland, Vernon, Saginaw | $1.44 | 5–27–41 |
| Buckeye, Edenville, Bentley, Beaverton, Monitor, Kawkawlin | 1.42 | 5–27–41 |
| Freeman, Lincoln, Sherman Redding, Temple, Winterfield, Trenton-Monroe Co., Fork Tws.-Mecosta Co. | 1.39 | 5–27–41 |
| Hamilton-Grout | 1.29 | 5–27–41 |
| Adams | 1.27 | 6– 1–41 |
| Arenac, Clayton, Ogemaw, W. Branch | 1.24 | 5–27–41 |
| **Southwest (Shallow):** | | |
| Traverse, crude in Allegan, Kent, Ottawa, Van Buren Counties | 1.45 | 6– 2–41 |
| Clare | 1.11 | 5–27–41 |

## MIDDLE WEST PRICES

| FIELD— | Flat Price | Date Posted |
|---|---|---|
| Lima, Ohio-Ind. | $1.50† | 10–28–42 |
| Illinois Basin (Sohio Corp.) | 1.37 | 5–19–41 |
| Lake Centralia-Salem, Illinois | 1.37 | 5–19–41 |
| Eastern Ill.-Western Ind. | 1.22 | 5–21–41 |
| Western Kentucky | 1.32 | 5–21–41 |
| Birk City, Western Kentucky | 1.32 | 5–21–41 |
| Kentucky River, Eastern Ky. | 1.43 | 6–19–41 |
| Big Sandy River, Eastern Ky. | 1.38 | 6–19–41 |
| Cleveland, Lodi, Chatham, Ohio | 1.30 | 9– 1–41 |

## ROCKY MOUNTAIN STATES PRICES

| | | |
|---|---|---|
| **Colorado:** | | |
| Canon City and Florence | $1.05 | 5–21–41 |
| Iles | 1.07 | 5–20–41 |
| **Montana:** | | |
| Cat Creek | 1.15 | 4– 1–41 |
| Cut Bank (6 Buyers)* | 1.05-1.20 | 3–30–42 |
| Dry Creek | 1.02 | 5–20–41 |
| Sunburst | 1.00 | 5–20–41 |
| **New Mexico:** | | |
| Artesia | .94 | 5–21–41 |
| Hogback | 1.00 | 10–11–38 |
| **Wyoming:** | | |
| Big Muddy | 1.08 | 5–30–41 |
| Byron | .55 | 10–11–38 |
| Elk Basin | 1.00 | 5–21–41 |
| Frannie, Light | .70 | 5–20–41 |
| Frannie, Heavy | .47 | 5–20–41 |
| Garland | .50 | 10–11–38 |
| Grass Creek, Light | 1.00 | 5– 1–41 |
| Grass Creek, Heavy | .50 | 5–20–41 |
| Hamilton Dome | .45 | 5–20–41 |
| Lance Creek (Ohio Oil Co.) | 1.12 | 7– 1–41 |
| Mill Creek | .72 | 10–11–38 |
| Oregon Basin | .40 | 4–20–40 |
| Osage | 1.30 | 10–11–38 |
| Poison Spider | .59 | 10–11–38 |
| Rock River | 1.15 | 5–21–41 |
| Tensleep | .6785 | 5–20–41 |

*About 25% of Cut Bank crude brings $1.20 per barrel; 65% less than $1.20 and minimum $1.10; and 10% less than $1.10.

†$1.50-price applies to about ¾ of field's production; $1.60 to ¼ of it.

# Wholesale Prices of Refined Products in Principal Markets

| REFINED GASOLINE | Current Range (Cents a gal.) | | Changes from Month Ago | |
|---|---|---|---|---|
| **Oklahoma Refineries:** | | | | |
| 60 Octane and Under | 5⅛ | 5¼ | ... | ... |
| 63-66 Octane | 5½ | 5⅝ | ... | ... |
| 72-74 Octane | 5⅞ | 6 | ... | ... |
| 78 Octane, Ethyl | 6¾ | 6⅞ | ... | ... |
| **Mid-Western Tank Car:** | | | | |
| 60 Octane and Under | 5⅛ | 5¼ | ... | ... |
| 63-66 Octane | 5½ | 5⅝ | ... | ... |
| 72-74 Octane | 5⅞ | 6 | ... | ... |
| 78 Octane, Ethyl | 6¾ | 7⅛ | ... | ... |
| **New York Harbor:** | | | | |
| 68-70 Octane | 9¼ | 9¼ | ... | ... |
| 72-74 Octane | 9¼ | 10¼ | ... | ... |
| Min. 80 Octane, '39 Research | 9⅞ | 9⅞ | ... | ... |
| **Gulf Coast:** | | | | |
| 60 Octane unleaded | 5 | 5 | ... | ... |
| 65 Octane unleaded | 5⅛ | 5⅛ | ... | —⅜ |
| 68 Octane unleaded | 5¼ | 5¼ | ... | ... |
| 70 Octane unleaded | 5¼ | 5½ | ... | +⅛ |
| 72-74 Octane leaded | 5¾ | 5¾ | ... | ... |
| Min. 80 Octane, '39 Research | 5½ | 6 | ... | ... |
| **NATURAL GASOLINE** | | | | |
| **Grade 26-70:** | | | | |
| F.O.B. Group 3 | 3⅞ | 3⅞ | ... | ... |
| F.O.B. Br'kenr'ge, Tex. | 3½ | 3½ | ... | ... |
| **KEROSINE** | | | | |
| **Oklahoma Refineries:** | | | | |
| 41-43 water white | 4⅜ | 4½ | ... | ... |
| 42-44 water white | 4½ | 4½ | ... | —⅛ |
| **Mid-Western Tank Car:** | | | | |
| 41-43 water white | 4⅜ | 4⅜ | ... | —¼ |
| 42-44 water white | 4½ | 4½ | ... | ... |
| **New York Harbor** | 6⅞ | 6⅞ | ... | ... |
| **Gulf Coast:** | | | | |
| 41-43 water white | 3⅞ | 3⅞ | ... | —⅜ |
| **RANGE OIL** | | | | |
| At Oklahoma Refineries | 4 | 4⅛ | ... | ... |
| In Mid-Western Market Group 3, basis | 4 | 4 | ... | —⅛ |
| **LIGHT FUEL OILS** | | | | |
| **Oklahoma Refineries:** | | | | |
| No. 1 prime white | 3⅞ | 3⅞ | ... | ... |
| No. 1 straw | 3⅞ | 4 | ... | ... |
| No. 2 straw | 3⅝ | 3⅝ | ... | —¼ |
| No. 3 | 3½ | 3½ | ... | ... |
| **Mid-Western Tank Car:** | | | | |
| No. 1 prime white | 3⅞ | 3⅞ | ... | —¼ |
| No. 2 straw | 3⅝ | 3⅝ | ... | ... |
| No. 3 | 3½ | 3½ | ... | ... |
| **New York Harbor:** | | | | |
| No. 1 | 6⅞ | 6⅞ | ... | ... |
| No. 2 | 6¾ | 6¾ | ... | ... |
| No. 3 | 6¾ | 6¾ | ... | ... |
| **Gulf Coast:** | | | | |
| No. 2 | 3¾ | 3¾ | ... | ... |

| HEAVY FUELS | Current Range (Per Bbl.) | | Changes from Month Ago | |
|---|---|---|---|---|
| **Oklahoma Refineries:** | | | | |
| No. 6 | $0.80 | $0.90 | ... | ... |
| 14-16 Gravity | .95 | .95 | ... | ... |
| **Mid-Western Tank Car:** | | | | |
| No. 5 | .85 | .85 | ... | ... |
| No. 6 | .80 | .80 | ... | ... |
| **New York Harbor:** | | | | |
| No. 5 | 1.95 | 2.10 | ... | ... |
| No. 6 | 1.65 | 1.65 | ... | ... |
| **BUNKER C FUEL OIL (Per barrel, ships' bunkers)** | | | | |
| Gulf Coast | $0.85 | $0.85 | ... | ... |
| New York Harbor | 1.65 | 1.65 | ... | ... |
| **DIESEL OIL (Per barrel, ships' bunkers)** | | | | |
| Gulf Coast | $1.65 | $1.65 | ... | —.03 |
| New York Harbor | 2.78 | 2.78 | ... | ... |
| **LUBRICATING OIL (Cents a gallon)** | | | | |
| **Oklahoma Refineries:** | | | | |
| Bright stock (viscosity at 210°): | | | | |
| 200 vis. D, 10-25 pour point | .27 | 27 | ... | ... |
| 150-160 vis. D: | | | | |
| 0-10 pour point | 23 | 23 | ... | ... |
| 10-25 pour point | 22½ | 23 | ... | ... |
| 25-40 pour point | 23 | 23 | ... | ... |
| 150-160 vis. E | 22 | 22 | ... | ... |
| 120 vis. D, 0-10 pour point | 22 | 22 | ... | ... |
| Cylinder Stocks: | | | | |
| 600 s.r. dark green | 8½ | 8½ | ... | ... |
| 600 s.r. olive green | 10 | 11 | ... | ... |
| 631 s.r. | 18½ | 18½ | ... | ... |
| Neutral Oils (viscosity at 100°, 0-10 pour point): | | | | |
| Pale Oils: | | | | |
| 60- 85 vis. No. 2 color | 8 | 8 | ... | ... |
| 86-110 vis. No. 2 color | 8½ | 8½ | ... | ... |
| 150 vis. No. 3 color | 14½ | 14½ | ... | ... |
| 180 vis. No. 3 color | 15 | 15 | ... | ... |
| 200 vis. No. 3 color | 15 | 15 | ... | ... |
| 250 vis. No. 3 color | 16 | 16½ | ... | ... |
| 280 vis. No. 3 color | 17 | 17 | ... | ... |
| 300 vis. No. 3 color | 18 | 18 | ... | ... |
| Red Oils: | | | | |
| 180 vis. No. 5 color | 15 | 15 | ... | ... |
| 200 vis. No. 5 color | 15 | 15 | ... | ... |
| 280 vis. No. 5 color | ... | ... | ... | ... |
| 300 vis. No. 5 color | 17½ | 17½ | ... | ... |
| **Western Pennsylvania:** | | | | |
| Cylinder Stocks: | | | | |
| 600 s.r. filtrable | 15 | 15 | ... | ... |
| 650 s.r. | 15½ | 15½ | ... | ... |
| 600 flash | 16 | 16 | ... | ... |
| 630 flash | 17 | 17 | ... | ... |

| LUBRICATING OIL (Cents a gal.) | | | Changes from Month Ago | |
|---|---|---|---|---|
| Bright Stock (No. 8 Color, 145-155 vis. at 210°, 540-550 fl.): | | | | |
| 10 pour test | 30½ | 30½ | ... | ... |
| 15 pour test | 29½ | 29½ | ... | ... |
| 25 pour test | 25 | 25 | ... | ... |
| Viscous Neutrals (No. 3 Color, vis. at 70°): | | | | |
| 200 vis. (180 at 100), 420-425 fl.: | | | | |
| Zero pour test | 31½ | 31½ | ... | ... |
| 10 pour test | 30½ | 30½ | ... | ... |
| 15 pour test | 29½ | 29½ | ... | ... |
| 25 pour test | 23 | 26 | —1 | ... |
| 150 vis. (143 at 100), 400-405 fl.: | | | | |
| Zero pour test | 29½ | 29½ | —2 | —2 |
| 10 pour test | 28½ | 28½ | ... | ... |
| 15 pour test | 27½ | 27½ | ... | ... |
| 25 pour test | 21 | 24 | —1 | ... |

## EASTERN STATES CRUDE OIL PRICES

| FIELD— | Flat Price | Date Posted |
|---|---|---|
| Bradford-Allegany | $3.00 | 3–26–42 |
| Sw. Pa. Pipe Line | 2.65 | 3–26–42 |
| Eureka Pipe Line, W. Va. | 2.59 | 3–26–42 |
| Corning Grade, Ohio | 1.31 | 5–27–41 |
| Buckeye Crude, Ohio | 2.30 | 6–18–41 |

## MAJOR CRUDE OIL PRICE CHANGES

| | Penna. Grade | Mid-Cont. (36 Gr.) | Calif. (26 Gr.) |
|---|---|---|---|
| Jan. 1, 1940 | Up 25 | ..... | ..... |
| Feb. 1, 1940 | ..... | ..... | Cut *7 |
| May 22, 1940 | Cut 25 | ..... | ..... |
| June 18, 1940 | Cut 25 | ..... | ..... |
| July 12, 1940 | Cut 25 | ..... | ..... |
| Aug. 28, 1940 | Cut 15 | ..... | ..... |
| Nov. 12, 1940 | Up 15 | ..... | ..... |
| Dec. 17, 1940 | Up 15 | ..... | ..... |
| Jan. 27, 1941 | Up 15 | ..... | ..... |
| April 1, 1941 | ..... | Up 5 | ..... |
| April 23, 1941 | Up 10 | ..... | ..... |
| April 24, 1941 | ..... | ..... | Up *6 |
| May 19, 1941 | ..... | Up 10 | ..... |
| May 21, 1941 | Up 15 | ..... | ..... |
| May 22, 1941 | ..... | ..... | Up *6 |
| June 18, 1941 | Up 20 | ..... | ..... |
| Aug. 14, 1941 | Up 23 | ..... | ..... |
| Aug. 25, 1941 | Cut 23 | ..... | ..... |
| March 26, 1942 | Up 25 | ..... | ..... |

* Signal Hill 26 gravity.

## CRUDE OIL PRICES IN CALIFORNIA

**Prices per barrel in field, posted by Standard Oil Company of California, effective May 23, 1941**
**All gravities above those quoted take highest price offered in that field**

| Gravity | Signal Hill (Long Beach) | Wilmington | El Segundo | Seal Beach | Huntington Beach | Inglewood | Playa del Rey | Olinda, Brea Canon | Athens-Rosecrans | Torrance | Richfield | Whittier, East Coyote (La Habra) | Montebello | West Coyote Hills | Santa Fe Springs | Newhall, Kern River, Kern Front, McKittrick, Round Mountain | Greeley, Canal, Wasco | Coles Levee | Mountain View | Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area | Lost Hills | Coalinga | Kettleman Hills | Elwood Terrace |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14–14.9 | .... | $0.68 | .... | .... | $0.71 | .... | .... | $0.70 | .... | $0.70 | $0.70 | $0.70 | $0.72 | .... | .... | $0.73 | .... | .... | .... | $0.73 | $0.73 | $0.73 | .... | .... |
| 15–15.9 | .... | .71 | .... | .... | .75 | $0.76 | .... | .72 | .... | .72 | .71 | .72 | .72 | .... | .... | | .... | .... | .... | .73 | .73 | .73 | .... | .... |
| 16–16.9 | .... | .74 | $0.79 | .... | .79 | .79 | .... | .75 | .... | .74 | .73 | .75 | .72 | .... | .... | | .... | .... | .... | .73 | .75 | .73 | .... | .... |
| 17–17.9 | .... | .78 | .82 | .... | .82 | .82 | .... | .78 | .... | .77 | .76 | .78 | .72 | .... | .... | | .... | .... | .... | .75 | .78 | .73 | .... | .... |
| 18–18.9 | $0.80 | .82 | .86 | .... | .86 | .85 | .... | .81 | .... | .80 | .79 | .82 | .74 | .... | .... | | .... | .... | .... | .78 | .81 | .73 | .... | .... |
| 19–19.9 | .84 | .86 | .90 | .... | .89 | .88 | .... | .85 | .... | .83 | .82 | .85 | .77 | .... | .... | Wheeler Ridge | .... | .... | $0.73 | .81 | .84 | .75 | .... | .... |
| 20–20.9 | .88 | .90 | .94 | .... | .93 | .92 | $0.80 | .88 | .... | .86 | .85 | .89 | .80 | .... | .... | | .... | .... | .76 | .85 | .87 | .77 | .... | .... |
| 21–21.9 | .92 | 94 | .98 | .... | .96 | .95 | .84 | .91 | .... | .89 | .89 | .92 | .84 | .... | .... | | .... | .... | .79 | .90 | .90 | .80 | .... | .... |
| 22–22.9 | .96 | .98 | 1.02 | $0.88 | .99 | .98 | .87 | .95 | .... | .93 | .93 | .96 | .87 | .... | .... | $0.76 | .... | .... | .83 | .94 | .93 | .83 | .... | .... |
| 23–23.9 | 1.00 | 1.02 | 1.05 | .92 | 1.02 | 1.01 | .... | .98 | .... | .97 | .98 | 1.00 | .91 | .... | .... | .80 | .... | .... | .87 | .99 | .96 | .86 | .... | .... |
| 24–24.9 | 1.03 | 1.06 | 1.07 | .97 | 1.05 | 1.04 | F.O.B. | 1.01 | .... | 1.01 | 1.02 | 1.03 | .94 | $0.99 | .... | .83 | .... | .... | .90 | 1.03 | .99 | .89 | .... | .... |
| 25–25.9 | 1.07 | 1.09 | 1.10 | 1.01 | 1.08 | 1.07 | Our | 1.04 | .... | 1.05 | 1.06 | 1.07 | .98 | 1.02 | .... | | .... | .... | .94 | 1.07 | 1.01 | .92 | .... | .... |
| 26–26.9 | 1.11 | 1.12 | 1.12 | 1.06 | 1.11 | 1.10 | Pipe | 1.08 | .... | 1.09 | 1.10 | 1.11 | 1.01 | 1.06 | .... | | .... | .... | .97 | 1.11 | 1.04 | .95 | .... | .... |
| 27–27.9 | 1.15 | 1.15 | 1.15 | 1.10 | 1.14 | 1.14 | Line | 1.11 | .... | 1.13 | .... | 1.15 | 1.05 | 1.10 | $1.04 | .... | .... | .... | 1.01 | 1.15 | 1.07 | .98 | .... | .... |
| 28–28.9 | 1.18 | 1.18 | 1.17 | 1.15 | 1.17 | 1.17 | .... | 1.14 | .... | 1.17 | .... | .... | 1.08 | 1.13 | 1.08 | .... | .... | .... | 1.04 | 1.19 | 1.10 | 1.00 | .... | .... |
| 29–29.9 | 1.20 | 1.21 | .... | 1.19 | 1.20 | 1.20 | .... | .... | $1.17 | .... | .... | .... | 1.12 | 1.17 | 1.12 | .... | .... | .... | 1.07 | 1.24 | 1.13 | 1.02 | .... | .... |
| 30–30.9 | 1.23 | 1.24 | .... | .... | 1.23 | 1.22 | .... | .... | 1.21 | .... | .... | .... | 1.15 | 1.21 | 1.15 | .... | $1.01 | $1.09 | 1.10 | 1.28 | 1.16 | 1.04 | .... | F.O.B. |
| 31–31.9 | .... | .... | .... | .... | .... | 1.24 | .... | .... | 1.25 | .... | .... | .... | 1.19 | 1.24 | 1.19 | .... | 1.04 | 1.12 | 1.14 | | | 1.06 | .... | Ship |
| 32–32.9 | .... | .... | .... | .... | .... | .... | .... | .... | 1.29 | .... | .... | .... | 1.23 | 1.28 | 1.23 | .... | 1.07 | 1.14 | 1.17 | | | 1.09 | .... | .... |
| 33–33.9 | .... | .... | .... | .... | .... | .... | .... | .... | 1.32 | .... | .... | .... | 1.27 | .... | 1.26 | .... | 1.10 | 1.17 | .... | .... | .... | 1.11 | .... | $1.22 |
| 34–34.9 | .... | .... | .... | .... | .... | .... | .... | .... | 1.36 | .... | .... | .... | 1.31 | .... | 1.30 | .... | 1.13 | 1.20 | .... | .... | .... | 1.13 | .... | 1.25 |
| 35–35.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.35 | .... | .... | .... | 1.16 | 1.22 | .... | .... | .... | .... | $1.23 | 1.28 |
| 36–36.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.39 | .... | .... | .... | 1.19 | 1.25 | .... | .... | .... | .... | 1.26 | .... |
| 37–37.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.43 | .... | .... | .... | 1.22 | .... | .... | .... | .... | .... | 1.29 | .... |
| 38–38.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.47 | .... | .... | .... | 1.25 | .... | .... | .... | .... | .... | .... | .... |
| 39–39.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.51 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 40–40.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.53 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |

# U. S. Field Operations

## Illinois Basin

### Hamilton County Well Makes Good Oil Flow

Well in Hamilton County field flows 375 barrels of oil in 5 hours. Show of oil in Wayne County wildcat. Cypress exploration increases in Bible Grove field of Clay County.

**Hamilton County:** Texas Company's Minton 5, SW SE NE 20-4s-7e, 5 miles northeast of McLeansboro in the Blairsville pool, flowed 375 barrels of oil in 5 hours from McClosky lime, following casing perforations. The test, one of the best recent completions in Illinois, offsets to the west Gulf's Sneed 1 which made but 82 barrels of oil a day from Aux Vases sand.

**Wayne County:** Deep Rock Oil Corporations Windland 1, NE SW 12-2s-6e, 2 miles southwest of the Covington pool, was drilling ahead after swabbing 88 barrels of oil and 22 barrels of water in 24 hours from McClosky lime at 3315-16 feet after 2100 gallons of acid. Deep Rock's Gentley 1, NW NW SE 7-1s-8e, 2 miles east of Jeff, swabbed 270 barrels of oil and 25 barrels of water in 24 hours from McClosky lime following a plug-back job.

**Clay County:** Several fair wells recently have been completed in the Bible Grove pool, Sections 4 and 9-5n-7e. New wells there include Texas Company's E. F. Blemker 2, NW SE NE 4-5n-7e, 117 barrels in 9 hours from sand at 2502-20 feet. Blemker 3, NW NW NE 4-5n-7e, 20 barrels in 11 hours from sand at 2511-23 feet; Texas' Landwehr 4, SE SE NE 8-5n-7e, 14 barrels in 3 hours from sand at 2521-34 feet.

**Madison County:** Kingwood Oil Company's J. E. Neggli 1, NE NE NE 29-5n-5w, 10 miles northeast of the St. Jacob pool, found a show of oil in a sand at 570 feet but is being drilled ahead to test the Trenton lime. It is one of the most closely watched wildcats in the state.

### Kentucky

**Henderson County:** In the Smith Mills pool, about 12 miles southwest of Evansville, D. C. Bintliff's C. D. Burbank 2-A, 4-P-21, was recovering 20 bbls of oil an hour, swabbing, from the Cypress sand at 2299-2315 ft.

**Union County:** Sun Oil Co. is rigging up rotary for Morgan 2, NW SE SE 20-P-19.

### Results on Industry's Prospecting Fronts

**Michigan:** Wildcat activity increased.

**California:** Dormant heavy-oil fields have intensive drilling in prospect.

**Mississippi:** Wildcat has show of distillate.

**Louisiana Coast:** Cameron wildcat has gat with indications of oil production.

**East Texas:** Nacogdoches deep test has water in Glen Rose.

**South Texas:** New pay found in Starr County; to test showing in Duval.

**North Texas:** Clay County wildcat erecting tanks for final test.

**Illinois:** Hamilton County well makes good flow.

#### ILLINOIS FIELD COMPLETIONS

**Clay County:** Texas' Bloemker 1, se se ne 4-5n-7e, Weller 2519-32 ft, 242 bbls, 2534 ft.

**Fayette County:** Carter's McCollum 5-D, c nw sw 2-8n-3e, Devonian 3102-04 ft, 35 bbls, 3104 ft.

**Gallatin County:** Carter's Busiek 3, nw sw se 11-8s-10e, Tar Spgs 2034-56 ft, 194 bbls, 2056 ft.

**Hamilton County:** Texas Co.'s Ernst 2, c e½ sw sw 16-4s-7e, Aux V 3260-78 ft, 224 bbls, 3426 ft.

Texas Co.'s Minton 2, c e½ sw nw 21-4s-7e, Aux V 3280-3305 ft, 150 bbls, 3454 ft.

Magnolia's Hamilton-McFarland 2, c sw nw se 24-6s-5e, Aux V 3102-27 ft, 278 bbls, 3127 ft.

Ohio's Dial 1, c nw sw nw 7-6s-6e, Aux V 3194-3210 ft, 19 bbls, 3210 ft.

Shell's Daily 12, c nw sw ne 12-6s-6e, Aux V 3007-43 ft, 345 bbls, 3055 ft.

Perrine & Pearson's Lee 1, sw ne nw 27-6s-6e, abnd 3098 ft.

J. W. Menhall's Harrawood 1, se sw se 18-6s-7e, Aux V 3046-65 ft, 378 bbls, 3065 ft.

**Jasper County:** Pure's Swick 2, se sw 20-6n-10e, Rosi 2803-07 ft, McCl 2823-40 ft, 105 bbls, 2855 ft.

**Jefferson County:** Lario O&G's Mountain-Mateer 1, c n½ nw se 36-2s-4e, McCl 3012-28 ft, 469 bbls, 3028 ft.

**Lawrence County:** E. O. Olds' Van Way 6, nw ne se 23-2n-12w, Biehl 1342-71 ft, Buchanan 1306-38 ft, 200 bbls, 1371 ft.

S. W. Mitchell's Stevens 1, c nw ne nw 25-2n-12w, abnd 1427 ft.

**Montgomery County:** W. R. Holmes' Niemann 1, c nw se sw 29-8n-5w, Potts sand 600-02 ft, 15 bbls, 602 ft.

**Richland County:** Gulf's Sterchi 2, se sw 25-5n-10e, McCl 3003-08 ft, 100 bbls, 3023 ft.

**Wabash County:** Magnolia's Payne 3, se ne se 8-1n-12w, abnd 1825 ft.

Magnolia's Payne 8, ne ne se 8-1n-12w, abnd 1584 ft.

Magnolia's Payne 4, nw nw sw 9-1n-12w, abnd 1525 ft.

Magnolia's Payne 6, nw ne se 9-1n-12w, abnd 2075 ft.

**Washington County:** Harry W. Schwarz'

## Wells Completed in the United States in Week Ended January 2, 1943

**Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.**

| STATE OR DISTRICT | FIELD COMPLETIONS: New Wells: Oil | Gas | Distillate | Water Input | Gas Input | Water Disposal | Dry | Total | Old Wells Drilled Deeper: Oil | Gas | Dry | Total | WILDCAT COMPLETIONS: Oil | Gas | Distillate | Dry | Total | ALL COMPLETIONS: This Week | Last Week | Cumulative: This Year | Last Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arkansas | | | | | | | | | | | | | | | | | | | 3 | | |
| California | 18 | | | | | | | 18 | | | | | | | | 3 | 3 | 21 | 18 | 21 | 12 |
| Colorado | 2 | | | | | | 1 | 3 | | | | | | | | | | 3 | | 3 | |
| Illinois | 21 | | | | | | 8 | 29 | | | 1 | 1 | 1 | | | 5 | 6 | 36 | 35 | 36 | 56 |
| Indiana | 1 | | | | | | | 1 | | | 1 | 1 | | | | | | 2 | 5 | 2 | 10 |
| Kansas | 8 | 1 | | | | | 4 | 13 | 1 | | | 1 | | | | 8 | 8 | 22 | 22 | 22 | 58 |
| Kentucky | 1 | | | | | | 1 | 2 | | | | | | | | 1 | 1 | 3 | 5 | 3 | 5 |
| Louisiana | 3 | | | | | | 2 | 5 | | | | | | | | 1 | 1 | 6 | 11 | 6 | 14 |
| North Louisiana | | | | | | | | | | | | | | | | | | | 7 | | |
| South Louisiana | 3 | | | | | | 2 | 5 | | | | | | | | 1 | 1 | 6 | 4 | 6 | |
| Michigan | 2 | 1 | | | | | 2 | 5 | | | | | | 1 | | 4 | 5 | 10 | 12 | 10 | 26 |
| Montana | 3 | 8 | | | | | 1 | 12 | | | | | | | | | | 12 | | 12 | 4 |
| New Mexico | 2 | | | | | | 1 | 3 | | | | | | | | 2 | 2 | 5 | 6 | 5 | 1 |
| New York | 11 | | | 7 | | | | 18 | | | | | | | | | | 18 | 27 | 18 | 33 |
| Ohio | 3 | 8 | | | | | 8 | 19 | | | | | | | | | | 19 | 24 | 19 | 62 |
| Oklahoma | 15 | 3 | | | 2 | | 3 | 23 | 4 | | | 4 | 1 | | | 4 | 5 | 32 | 35 | 32 | 49 |
| Pennsylvania | 41 | 4 | | | | | 1 | 46 | | 2 | | 2 | | | | | | 48 | 45 | 48 | 8 |
| Texas | 40 | 1 | | 9 | | 1 | 14 | 65 | 1 | | 1 | 2 | 1 | | | 12 | 13 | 83 | 70 | 80 | 121 |
| East Texas Border Counties | | | | | | | | | | | | | | | | | | | | | |
| East Texas Field | | | | | | | | | | | | | | | | | | | | | |
| Rest of East Texas | 3 | | | | | | | 3 | | | | | | | | 1 | 1 | 4 | 6 | 4 | |
| North Texas | 5 | | | 9 | | 1 | 6 | 21 | | | 1 | 1 | | | | 5 | 5 | 27 | 10 | 27 | |
| West Central Texas | 1 | | | | | | 1 | 2 | | | | | 1 | | | | 1 | 3 | 8 | 3 | |
| West Texas | 16 | | | | | | 1 | 17 | 1 | | | 1 | | | | | | 18 | 16 | 18 | |
| Texas Panhandle | 6 | 1 | | | | | | 7 | | | | | | | | | | 7 | 7 | 7 | |
| Gulf Coast, Upper | 1 | | | | | | | 1 | | | | | | | | 1 | 1 | 2 | 8 | 2 | |
| Gulf Coast, Lower | 7 | | | | | | 4 | 11 | | | | | | | | 1 | 1 | 12 | 9 | 12 | |
| Southwest Texas | 1 | | | | | | 2 | 3 | | | | | | | | 4 | 4 | 7 | 5 | 7 | |
| South Central Texas | | | | | | | | | | | | | | | | | | | 1 | | |
| West Virginia | 3 | 14 | | | | | 8 | 25 | | | | | | | | | | 25 | 19 | 25 | 35 |
| Wyoming | 1 | | | | | | | 1 | | | | | | | | 1 | 1 | 2 | | 2 | 1 |
| Total United States | 175 | 40 | | 16 | 2 | 1 | 54 | 288 | 6 | 2 | 3 | 11 | 3 | 1 | | 41 | 45 | 344 | 337 | 344 | 495 |

Leffner 2, c ne se nw 13-3s-2w, abnd 1364 ft.

**Wayne County:** Deep Rock's Young 1, c ne ne 31-1s-7e, McCl 3211-25 ft, 165 bbls, 3225 ft.

N. V. Duncan, Inc.'s, Anderson 2, c ne sw 2-1s-8e, Aux V 2988-3000 ft, 85 bbls, 3145 ft.

Texas Co.'s Woodham 2, c ne sw 4-3s-7e, abnd 3443 ft.

**White County:** Magnolia's Jones 2, ne ne se 7-4s-10e, Tar Spgs 2489-2500 ft, 13 bbls, 2500 ft.

W. C. McBride, Inc.'s, Gray 7, nw se se 7-4s-10e, Tar Spgs 2487-97 ft and 2446-70 ft, 85 bbls, 2499 ft.

Skelly's Barbre B-2, c ne nw ne 18-4s-10e, Aux V 3063-82 ft, 143 bbls, 3082 ft.

Sun's Gardner 8, c nw sw nw 6-5s-11e, Tar Spgs 2278-86 ft and 2314-22 ft, 65 bbls, 2333 ft.

Pure-Carter's Gowdy 2, se sw se 7-6s-9e, Pt Crk 2807-25 ft, 117 bbls, 2827 ft.

### ILLINOIS WILDCAT COMPLETIONS

**Gallatin County — Failure:** Kingwood's Dodge 1, ne nw sw 32-8s-10e, abnd 2959 ft.

**Hamilton County—Failure:** Mid-Continent's Ruben 1, c ne ne ne 22-3s-6e, abnd 3508 ft.

**Jefferson County—Failure:** Geo. H. Echols' Aydt 1, c sw se sw 1-4s-4e, abnd 3363 ft.

**Madison County—Failure:** Stout et al's Goebel et al 1, c e½ nw nw 7-6n-7w, abnd 2079 ft.

**Richland County—New Field:** Pure's Berger Consol 1, se se sw 26-4n-9e, Weller 2577-88 ft, 41 bbls, 2588 ft.

**St. Clair County—Failure:** Mid-Sun Oil Co.'s Randle 1, c sw nw 2-1n-8e, abnd 1977 ft.

### ILLINOIS WELL DEEPENED

**Saline County—Failure:** Central PL's O. Carter 1, nw ne se 17-8s-7e, otd 2262 ft, abnd 3055 ft.

### ILLINOIS WILDCAT STARTS

**Clay County:** W. C. McBride, Inc.'s, Newman 1, c nw se 8-2n-5e, dr.

Gulf's Skelton 1, nw nw sw 17-2n-7e, lcn.

**Edwards County:** Bur Lambert's Van Sanschoick 1, c se nw 18-1n-10e, dr.

**Montgomery County:** W. R. Holmes' Monke 1, nw se nw 31-8n-5w, dr.

**White County:** W. C. McBride, Inc.'s, O. Millikan 1, c se se 4-7s-9e, dr.

**Bond County:** Kingwood's F. Gaffner 1, sw se ne 30-6n-3w, to deepen.

### INDIANA FIELD COMPLETION

**Gibson County:** R. D. Brown, Inc.'s, Lehman 5, ne se nw 36-1s-10w, Hardins 1362-86 ft, 37 bbls, 1387 ft.

### INDIANA WELL DEEPENED

**Pike County:** Ellis, Tr.'s McAtee 1, sw ne 27-1n-9w, otd 971 ft, abnd 1320 ft.

### INDIANA WILDCAT START

**Knox County:** Sinclair Wyoming and J. E. Bauer's Brevoot 1, sw nw sw 11-2n-11w, lcn.

### KENTUCKY FIELD COMPLETIONS

**Henderson County:** Cherry & Kidd's Burbank 7, 24-Q-21, Cyp 2285-97 ft, 500 bbls, 2297 ft.

**Ohio County:** J. C. Ellis' Gilbert Farmer 1-8, 21-N-32, abnd 1203 ft.

### KENTUCKY WILDCAT COMPLETION

**Ohio County—Failure:** West et al's Dennis Ashley 1, 1-L-31, abnd 750 ft.

## Oklahoma

### *Good Well Adds Acreage To Rusk Production*

Gas strike in Hughes County is being deepened. Wildcat shows in Logan County. Edge well at Rusk. Garvin wildcat going deep.

**Hughes County:** A wildcat gas strike in Cromwell sand is being deepened to Wilcox. Well is Burke-Greis Oil Company's Strickland 1, NW NE NE 19-7n-10e, which showed for 8,000,000 cubic feet of gas from the Pennsylvanian sand at 3835-3857 feet. Rock pressure was in the neighborhod of 1700 pounds.

**Stephens County:** Another relatively shallow pay on the Velma structure has been proven at Skelly Oil Company's Frensley 1-C, SW NE SW 25-1s-5w, which made 100 barrels daily on swab through perforations in sand at 1502-1650 feet. Pumping unit is being installed.

**Logan County:** Cleveland and Prue sands showed fair saturation on incomplete tests at Keener Oil Company's Anderson 1, NE SW NE 28-15-1e, which is drilling deeper in the Meridian sector. The deeper pay was drilled at 4794-4761 feet.

**Okfuskee County:** Dave B. Malernee's Taylor 1, NE SW SE 7-11-8e, on the edge of Rusk production, is making a good well to add 160 prospective acres to the field. Well is in Cromwell, making 38 barrels hourly, from 3635-3651 feet.

**Garvin County:** Amerada Petroleum Corporation's House 1, C SE NW 2-1n-3w, wildcat northeast of the shallow Robberson production, is drilling below 6890 feet in sand and lime.

### OKLAHOMA FIELD COMPLETIONS

**Carter County — Unnamed Pool:** Samedan Oil Co.'s Tomlinson 1, ne sw sw 13-5s-1e, sand 3942 ft, flow 104 bbls, 4205 ft.

**Creek County — Cushing:** Sinclair-Prairie's Jones 31, c sw nw 3-17n-7e, Bartles 2525 ft, shot 60 qts, pump 8 bbls, 2635 ft.

Sinclair-Prairie's Yarhola 21, c s½ s½ nw 9-17n-7e, pink lime 2557 ft, pump 16 bbls oil, 48 wtr, 2747 ft.

**Creek County—Glenn:** Gulf's E. Berryhill 51, c nw sw 9-17n-12e, Glenn 1554 ft, gas input, 1732 ft.

Sinclair-Prairie's Berryhill 45, c w½ e½ 16-17n-12e, Glenn 1392 ft, shot 140 qts 1454-1550 ft, pump 8 bbls, 1557 ft.

Sinclair-Prairie's Berryhill 46, ne sw se 16-17n-12e, Glenn 1416-1585 ft, gas input, 2006 ft.

Sinclair-Prairie's Berryhill 47, c e½ sw se 16-17n-12e, Glenn 1420-1568 ft, pump 14 bbls, 1580 ft.

**Creek County — Garfield:** Sinclair-Prairie's Crews 23, c e½ ne sw 19-22n-3w, Hoy 1165-81 ft, Garber 2122-31 ft, shot 50 qts, pump 10 bbls, 2195 ft.

**Creek County — Barnes:** Jack Chamberlin's Barnes 1, nw nw nw 15-23n-3w, abnd 2044 ft.

**Kay County—Dilworth:** Adkins' Hornek 1, c nw se 26-28n-1w, Permian 810-17 ft, pb to 1100 ft, 1,600,000 gas, 3676 ft.

**Logan County—Lowell:** Continental's Myers 1, sw nw sw 26-17n-4w, Layton 4942 ft, flow 352 bbls oil 16 hrs, 4959 ft.

**Logan County — Crescent:** Sinclair-Prairie's Short 3, sw ne ne 27-17n-4w, Layton 4955 ft, pb to 4978 ft, shot 10 qts 4966-76 ft, pump 15 bbls, 4983 ft.

**Logan County — Lovell:** Sinclair-Prairie's Knecht T-2, c nw ne 28-18n-4w, Dolo 5967 ft, 2000 gal acid, flow 65 bbls, 6034 ft.

**Marshall County — Isom Springs:** Gill & Morris' Adams 4, sw nw se 31-7s-6e, sand 515 ft, pump 15 bbls, td 521 ft.

**Osage County — Avant:** Sinclair-Prairie's (Osage) 64, c nw nw 20-23n-12e, Bartles 1681 ft, shot 20 qts, pump 2 bbls, 1728 ft.

**Osage County — Quapaw:** Cities Service's (Osage) 483, c n½ ne nw 16-25n-11e, Miss Chat 1905 ft, 2 gas, 1939 ft.

**Osage County—Bartlesville:** Sagamore O&G Co.'s Tribe 417, sw nw nw 15-26n-12e, Miss 1308 ft, 400,000 gas, 1432 ft.

**Pawnee County—Osage City:** Sinclair-Prairie's Jones 42, c sw nw 20-21n-8e, Bartles 2192 ft, shot 80 qts 2247-79 ft, pump 2½ bbls oil, 6 bbls water, 2283 ft.

**Pawnee County — East Watchorn Area:** Aladdin Pet. Co.'s Swearingen 1, sw ne se 23-23n-3e, Wx 3883 ft, 1000 gal acid, flow 329 bbls, 3887 ft.

**Pawnee County—East Watchorn:** Alma Oil Co.'s Robedeaux 3, c nw se 26-23n-3e, Wx 3950 ft, flow 225 bbls, 3954 ft.

**Pottawatomie County—Brooksville:** Continental's Baker 2, sw ne se 33-9n-3e, Hunton 4773 ft, 500 gal acid, flow 240 bbls, 4812 ft.

**Seminole County — Sylvian:** J. E. Hall's Micco 1, nw nw ne 11-10n-7e, Cromwell 3614 ft, abnd 3640 ft.

**Stephens County — Comanche:** Pace Pet.'s Carney 1, nw nw se 20-2s-7w, abnd 1836 ft.

### OKLAHOMA WELLS DEEPENED

**Carter County—Hewitt:** Walter Neustadt's Choate 120-3, ne se se 18-4s-2w, otd 2148 ft, sand 2077 ft, pb to 2204 ft, shot 230 qts 2094-2204 ft, pump 57 bbls, 2244 ft.

**Lincoln County—Avery:** Deep Rock's Mathews 1, se sw ne 26-17n-6e, otd 2574 ft, Viola 3135 ft, pb to 3178 ft, 2000 gal acid, flow 18 bbls oil, 3 wtr, 3205 ft.

**Osage County — Osage Hominy:** Pure's (Osage) 138, c w½ se 5-23n-8e, otd 2530 ft, Miss lm 2509 ft, pb to 2545 ft, swab 40 bbls oil, 18 wtr, 2561 ft.

**Seminole County—Keokuk:** Carter et al's Riddle 5, c n½ ne se 35-11n-6e, otd 4108 ft, Misener 4030 ft, pb to 4105 ft, 3000 gal acid, pump 90 bbls oil, 75 wtr, 4223 ft.

### OKLAHOMA WILDCAT COMPLETIONS

**Kay County—Failure:** Bogan's Vansellous 1, c sw sw 27-25n-1e, Layton 3097-3207 ft, abnd 3212 ft.

**Noble County—New Field:** Kubat et al's Tyer 1, ne ne sw 7-21n-3e, Miss 4024 ft, Wood 4210 ft, Miss 4231 ft, Syl 4208 ft, Viola 4236 ft, 1st Wx 4300 ft, 2nd Wx 4332 ft, pb to 4090 ft, perf 20 holes 3996-4016 ft, good so, well caught on fire, burned down rig and tools, well flowed by heads while running tbg, no gauge available, tbg set 4012 ft with pkr on bottom, 20 bbls, 4356 ft.

**Oklahoma County—Failure:** E. J. Kubat et al's Sanders 1, c ne ne 33-11n-1e, Paw 2400 ft, Oread 3550 ft, Belle City 3945 ft, Hogs 4370 ft, Ceb 4700 ft, Osw 5440 ft, Prue 5460 ft, Base Penn and Wood 5775 ft, Hunton 5780 ft, Syl 5965 ft, Dense 6090 ft, Dolo 6120 ft, 1st Wx 6302 ft, 2nd Wx 6327 ft, abnd 6352 ft.

**Seminole County—Failure:** Diamond et al's Moore 1-A, ne sw se 14-10n-5e, Belle City 1500 ft, Hogs 2025 ft, Ceb 2385 ft, Calvin 3235 ft, Mayes 4300 ft, Wood 4410 ft, Hunton 4475 ft, abnd 4485 ft.

**Stephens County—Failure:** Coline Oil Co.'s Ford 1, c ne se 24-1n-6w, abnd 2520 ft.

### OKLAHOMA WILDCAT STARTS

**Beckham County:** West Oak Gas Co.'s Brown 1, se se ne 36-10n-21w, lcn.

**Creek County:** Seismograph Service Corp.'s Belford 1, nw sw se 26-15n-10e, Osw 1495 ft, Glen 2054-2200 ft, dr 2250 ft.

**Garvin County:** Harry Culver et al's Rennie 1, se ne ne 20-3n-1e, dr.

Bradley Bros.' Strickland B-1, nw ne sw 19-4n-3e, dr 1080 ft.

**Oklahoma County:** Ace Gutowsky et al's Wagoner 1, nw nw sw 32-14n-4w, mit.

**Pottawatomie County:** Mid-Continent et al's Bullock 1, ne ne se 7-11n-6e, lcn.

**Stephens County:** W. F. Lundy's Wilkerson 1, ne nw nw 16-1s-5w, materials.

## Kansas

### *Swab Indicates New Field in Barton County*

New pool for Barton. Crowther edge well big. New Ellis strike probable extension.

**Barton County:** Mid-Continent Petroleum Corporation and Tom Palmer's Harrison 1, NWc NE 18-20-13w, is running tubing to test Arbuckle after the wildcat made 8 barrels hourly on swab.

**McPherson County:** Westgate-Greenland Oil Company's Crowther 2, C S½ NE NW 26-17-1w, at the east edge of production in Crowther field, has been given potential of 3000 barrels after treatment with 2000 gallons of acid. This well adds to the favorable outlook for a major extension of the pool in this direction.

**Barber County:** The Douglas (Pennsylvanian) sand strike of Great Lake Carbon Company at Welsh 1, NW SW SE 30-31-15w, southwest of Sun City, has been assigned a temporary potential of 50 barrels daily from 4249 ft. The field is to be known as Bear Creek.

**Ellis County:** Darby Petroleum Company's Hall 1, C W½ NE SW 31-12-20w, two miles east of Gugler field, Trego County, pumped 50 barrels daily from Arbuckle at 3834-3836 ft, a probable extension of Gugler production.

### KANSAS FIELD COMPLETIONS

**Barton County — Unnamed Pool:** Darby's Bushnell 1, c s½ sw sw 6-16s-12w, T. Ordovician chert 3339 ft, abnd 3425 ft.

**Barton County—Kraft-Prusa:** Shell's Studer 1, ne nw sw 14-17s-11w, Arb 3286 ft, swab 1377 bbls, 3309 ft.

**Ellis County—Marshall:** Lario's Marshall 13, c sw nw 31-11s-17w, Reagan 4136 ft, 330 bbls wtr hr, 4209 ft.

**Ellsworth County—West Stoltenberg:** Magnolia's Horejsi 2, c ne nw 17-16s-10w, Arb 3357 ft, 2000 gal acid, pump 47 bbls, 3374 ft.

**Ellsworth County — Morel:** Barnett & Shields' Kirkpatrick 1, c ne ne 21-9s-21w, Cherty Congl 3711 ft, abnd 3772 ft.

Cities Service's Morel B-2, nw sw ne 22-9s-21w, Arb 3807 ft, 4000 gal acid, pump 288 bbls, 3815 ft.

**McPherson County—Lindsborg:** Auto Ordnance's Anderson 1, c ne se 8-17s-3w, Viola 3332 ft, pb to 3370 ft, 1000 gal acid, pump 70 bbls fluid 7% wtr 2 hrs, 3500 ft.

**Phillips County—Ray:** Cities Service's Reese E-2, sw ne se 28-5s-20w, Arb 3563 ft, 1689 bbls, 3694 ft.

**Reno County—Peace Creek:** Cities Service's Keesling B-2, sw sw se 1-23s-10w, Viola 3734 ft, 325 gal acid, pump 16 bbls hr, 3739 ft.

**Reno County — Peace Creek Area:** Lion O&RCo.'s Yust 1, c se se 20-23s-10w, T. Viola 3651 ft, pb to 3715 ft, 12 gas, 3810 ft.

**Russell County — Gorham:** Braden & McClure et al's Peterson 2, c ne nw 12-14s-15w, Arb 3296 ft, pump 70 bbls, 3306 ft.

**Stafford County—Unnamed Pool:** Phillips' Bordewick 1, c s½ se ne 1-22s-14w, Arb 3804 ft, abnd 3831 ft.

**Stafford County — Leesburg Area:** Plains

Exploration's Mather 1, se nw sw 6-25s-12w, Arb 4185 ft, abnd 4208 ft.

**OLD WELLS DEEPENED**

**Russell County—Fairport:** Snowden & McSweeney's Booth 3, sw ne sw 32-11s-15w, otd 2912 ft, Lans K. C. 2875 ft, pb to 3172 ft, 100 bbls, 3192 ft.

**KANSAS WILDCAT COMPLETIONS**

**Graham County—Failure:** Aladdin Pet Co. et al's Federal Land Bank 1, sw sw sw 22-8s-25w, Topeka 3352 ft, Lans 3700 ft, Base KC 4050 ft, abnd 4100 ft.

**Leavenworth County—Failure:** Schlottman et al's Perkins 1, c se ne 22-11s-21e, Miss 1228 ft, abnd 1431 ft.

**Marion County — Failure:** Nelson Drlg.'s Hacker 1, se ne ne 6-17s-1e, Miss 2745-54 ft, abnd 2757 ft.

**Phillips County—Failure:** Good & Floyd's Hoover 1, ne nw ne 31-3s-17w, Anhy 1475 ft, Ft. Hays 270 ft, Topeka 2916 ft, Lans 3145 ft, Sooy 3548 ft, Simp 3650 ft, Arb 3694 ft, abnd 3712 ft.

Carter's Jackson 1, c nw nw 20-4s-18w, Anhy 1476 ft, pb 3260 ft, Sooy 3430 ft, Granite 3498 ft, abnd 3506 ft.

**Rooks County — Failure:** Black-Marshall's Gartrell 1, nw nw nw 24-6s-20w, Topeka 3170 ft, Lans 3885 ft, abnd 3657 ft.

**Saline County—Failure:** Max Cohen et al's Johnson 1, ne sw sw 30-15s-2w, Lans 2182 ft, Miss 2828 ft, Hunton 3295 ft, Sylvan 3334 ft, Viola 3409 ft, Simp 3560 ft, Simp Dolo 3570 ft, Simp Sand 3590 ft, abnd 3605 ft.

**Stafford County—Failure:** J. H. Hershey's Firebaugh 1, c se sw 11-23s-13w, Lans 3432 ft, Viola 3758 ft, Simp sand 3835 ft, Arb 3889 ft, abnd 3906 ft.

**KANSAS WILDCAT STARTS**

**Barber County:** Aladdin Pet Co.'s National Gypsum Co 1, sw nw se 20-30s-15w, mim.

**Barton County:** Vernon O&G et al's Barrett 1, se ne se 36-16s-14w, lcn.

Vernon and Alpine Oil & Royalty Co.'s Eveleigh 1, se nw se 16-18s-13w, lcn.

Branine & Holl's Steckel 1, sw sw se 32-19s-12w, rig.

**Edwards County:** J. H. Hershey and R. T. Ritchie's Hawley 1, ne se ne 13-24s-17w, woc.

**McPherson County:** Globe's Ostlind 1, sw sw ne 8-19s-3w, lcn.

**Reno County:** Skelly's Potter 1, se se ne 29-26s-8w, lcn.

**Rooks County:** Lario and Falcon-Seaboard's 1, nw nw se 3-10s-20w, ponds.

Three Way Drlg.'s Roelff 1, c ne nw 31-7s-17w, lcn.

Bird Hanley & Sheedy's Allen 1, nw sw sw 32-16s-16w, mim.

**Saline County:** Bay Pet Co.'s Rockhold 1, nw nw nw 20-13s-1w, pits.

Bay Pet Co.'s Peterson 1, ne sw nw 32-1ns-1w, mim.

## New Mexico

**NEW MEXICO FIELD COMPLETIONS**

**Eddy County:** Danciger Oil & Refineries' Turner 10-B, c sw ne 20-17s-31e, flow 30 bbls, 2-in, natural, lime 3403-50 ft.

Franklin Pet. Corp.'s Canfield 3-A, c nw sw 7-18s-30e, flow 792 bbls 2-in, shot 40 qts 2975-2830 ft, td 2835 ft.

**Lea County — Maljamar:** Phillips' State-Lea-Mex 2, c se sw 19-17s-32e, elev 4069 ft, salt 1270-2369 ft, used 2500 gals acid, 3 nitro shots, abnd 4352 ft.

**NEW MEXICO WILDCAT COMPLETIONS**

**Guadalupe County—Failure:** Wirt Franklin Pet. Corp-Phillips Pet. Co.'s Chico 1, c sw sw 24-11n-18e, elev 5385 ft, otd 1965 ft, abnd in granite 2205 ft.

**Eddy County—Failure:** Premier Pet. Corp.'s Stablein 1, c nw ne 15-16s-30e, elev 3812 ft, red sand 2180 ft, abnd in sul w 3558-3802 ft.

**NEW MEXICO WILDCAT START**

**Lea County:** B. H. Nolen et al's W. M. Snyder 1, c ne ne 29-16s-36e, sp.

## West Texas

### *Gaines Wildcat Will Get Acid Treatment*

Gaines County wildcat was unloading circulating oil for production test. Deep test on north flank of Slaughter field was running low on Permian markers. An Ellenburger test was due for southwest edge of Yates field.

**Gaines County:** Shell's Leaverton 1, 4 miles southwest of Wasson field, failed to indicate flowing production after swabbing down circulating oil to within 400 feet from bottom at 7772 feet, with 5-inch casing set at 7480 feet. Acid treatments are to be given the broken oil pay logged in Clear Fork zone, topped at 7487 feet, and should this prove noncommercial, perforations will be made opposite promising saturation at 6735-6860 feet.

**Hockley County:** Jerry Hawkins et al's Mallet 57-A, third projected Clear Fork test for edge of Slaughter field, was drilling at 4940 feet, having registered low structural position in topping first lime at 4100 feet and San Andres at 4466 feet, elevation 3639 feet. This outpost is on the north rim of the structure, which has a 12-mile front without a failure.

**Crane County:** Magnolia's Tucker 1, ¼ mile northeast offset to its McKee pool discovery, recovered salty-sulphur water from Ellenburger dolomite 6950-7200 feet, and is to be abandoned. Discovery made flowing well from Simpson at 6125-86 feet.

Gulf's Estes 1, 3 miles west of Ordovician production in Sand Hills field was drilling basal Permian 6035 feet. Gulf's Dawson 1-A, which yielded small amount low-gravity oil with considerable water from Simpson perforations 5177-91 feet, having plugged back from barren Ellenburger 5305-5505 feet, will perforate opposite show in Permian near 1960-foot level.

**Winkler County:** Magnolia's State-Walton 20, wildcat between Keystone

# TARGET FOR TONIGHT

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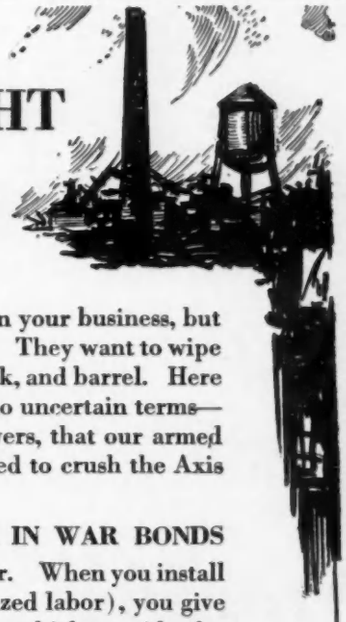

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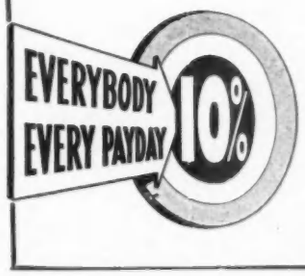


# *Buy* War Savings Bonds

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**THE OIL WEEKLY, Houston, Texas**

and Kermit fields that was temporarily abandoned a year ago in Devonian at 7620-8445 ft, has installed rotary to deepen to Ellenburger. Amon Carter et al's Walton-Pure 2-C, scheduled 10,000-foot test for Keystone field, drilling lime 7355 feet. Shell's Blue 1, east edge of county, entered chert near 8400-foot level, and was drilling hard chert 8415 feet. It is to be carried beyond the 8500-foot contract depth.

**Deep Project:** Standard Oil Company of Texas proposes to start a projected Ellenburger test on Smith ranch, GC & SF 9, Blk 194, near southwest edge of Yates field, which has not been explored beyond regular Permian. Company recently acquired considerable acreage within and near northeast quarter of TC Ry Blk Z to support this deep exploratory test, which will be about 9 miles east of Humble's Ellenburger failure at 9811 feet.

**Reagan County:** Sharples Corporation's University-Humble 1, inside test for Barnhart pool, awaiting production test of Ellenburger at 9158 feet, with 5½-inch at 9062 feet. Rig has been skidded to southeast corner of the 151-acre lease for second test. Amerada is drilling 5 tests.

### WEST TEXAS COMPLETIONS

**Andrews County — West Fuhrman:** N. G. Penrose, Inc.'s, University-Empire 2, 1842 ft from n and 678 ft from e lines sec 3, blk 10, flow 110 bbls, ¼-in, natural, 4380-4620 ft.

**Andrews County—Embar-Ellenburger:** Phillips' University-Andrews 12, c se se sec 24, blk 11, elev 3277 ft, top Clear Fork 5510 ft, Wolfcamp 7748 ft, Simpson 7860 ft, Ellenburger 8133 ft, abnd 8195 ft.

**Cochran County—Slaughter:** J. W. Hawkins et al's Mallet 3-A, 580 ft out NEc lab 25, leag 47, Edwards CSL, flow 846 bbls cas, acid 11,500 gals 4915-68 ft.

J. W. Hawkins et al's Mallet 6-A, 580 ft out SWc lab 24, leag 47, flow 889 bbls cas, acid 11,500 gals 4933-81 ft.

J. W. Hawkins et al's Mallet 24-A, 580 ft out SEc lab 16, leag 47, flow 679 bbls cas, acid 11,500 gals 4923-69 ft.

Texas Co.'s Mallet 7-F, 580 ft out NWc lab 15, leag 51, Scurry CSL, pump 246 bbls, plus 26 percent bs&w, 2-in, acid 11,500 gals 5012-65 ft.

**Crockett County — World-Powell:** H. G. Eastham, Jr.'s, Powell 4-A, c sw nw GC&SF 52, blk BB, pump 57 bbls, plus 7 percent bs&w, shot 25 qts 2558-75 ft, td 2602 ft.

**Hockley County—Slaughter:** J. C. Hawkins et al's Mallet 14-A, lab 23, leag 47, Edwards CSL, flow 1034 bbls cas, acid 11,500 gals 4928-90 ft.

T. F. Morrow et al's Mallet 3, 580 ft from NEc lab 23, leag 48, Edwards CSL, flow 632 bbls cas, acid 12,000 gals 4912-65 ft.

T. F. Morrow et al's Mallet 7, lab 22, leag 48, Edwards CSL, flow 994 bbls cas, acid 12,000 gals 4920-68 ft.

T. F. Morrow et al's Mallet 11, 580 ft from NEc lab 21, leag 48, Edwards CSL, flow 724 bbls cas, acid 12,000 gals 4897-4956 ft.

T. F. Morrow et al's Mallet 12, 580 ft from NWc lab 21, leag 48, Edwards CSL, flow 744 bbls cas, acid 8000 gals 4916-65 ft.

Texas Co.'s Slaughter 134, 510 ft out SEc lab 81, leag 37, Zavalla CSL, flow 1496 bbls open, acid 11,500 gals 4915-95 ft.

**Pecos County—Abell:** Skelly Oil Co.'s Grove 1, 810 ft from nw and 730 ft from sw lines 47.54-ac lse, H&TC 4, blk 3, flow 853 bbls ½-in, acid 2000 gals Ellenburger perf 5870-5900 ft, td 5905 ft.

**Upton County—McCamey:** J. W. Ellis et al's Robbins 12-B, se sw nw GC&SF 4, blk 3, pump 71 bbls, plus 120 bbls water, lime 2080-2239 ft.

**Winkler County—Emperor:** Skelly Oil Co.'s Halley 54, ne se nw PSL 16, blk B-11, flow 604 bbls 9/16-in, natural, 2729-2883 ft.

**Winkler County — Keystone:** Texas Co.'s Campbell 12, 555 ft out SEc PSL 23, blk B-3, flow 221 bbls cas, shot 260 qts 3189-3321 ft, td 3325 ft.

### WEST TEXAS OLD WELL DEEPENED

**Howard County:** Fleming Oil Co. et al's Denman 2-C, se nw se T&P 16, blk 30, otd 2752 ft, pump 105 bbls, shot 570 qts 2745-2875 ft.

## North Texas

### *Clay Prospect Waiting on Tanks Before Testing*

Clay County prospect awaiting tankage for production test. Joy pool has promise of Strawn production. Stanolind acquires control of acreage around its Wise County discovery.

**Clay County:** Roy Lee, trustee's Maddox-Shell 1, 8 miles northwest of Ringgold pool, due to be first discovery for new year, was awaiting tankage before unloading after using 5000 gallons acid through perforations 5476-5506 feet, opposite saturation in Bend, topped 5471 feet. No test has ben made of Ellenburger dolomite at 5583-5672 feet. This wildcat is an offset to a test that was junked while drilling Ellenburger at 5700 feet. Shell's Clark 3, southeast outpost for Joy pool and a failure in the regular 5900-foot Mississippian oil zone, indicated Strawn production possibilities in swabbing 4 barrels fluid hourly, estimated 50 percent oil, from perforations 3950-75 feet.

**Wise County:** Stanolind paid $25,000 cash and $200,000 payable from production to Britt Cranfill and C. E. Rodgers for 1000 acres of scattered leases around the former's recent discovery pumper in northwest corner of county. This purchase indicates that Stanolind proposes additional development.

**Archer County:** Whitaker Oil Co.'s Coleman 2, east offset to its partially junked Strawn prospect, failed to encounter the projected pay in coring to 3714 feet, and is scheduled to continue to the Ellenburger. Coleman 1 developed collapsed pipe after nitro shot in Strawn 3690-3721 feet.

**Wildcat Failures:** Roy Lee, trustee's Baze 1, 3 miles northwest of New Castle, Young County, quit in Mississippian 4848-4910 feet. In Montague County, Youngblood and Foree's Quillin 1, 2 miles south of Clingingsmith pool, fulfiled contract at 7261 feet, and Benton 1.3 miles south of Ringgold pool, halted at 6100 feet after checking low.

### NORTH TEXAS FIELD COMPLETIONS

**Clay County—Watson:** Roy Lee, trustee's Watson 2-A, 690 ft from s and 2140 ft from e lines W. A. Farris sur, Bend 5231 ft, flow 110 bbls, 12/64-in, acid 3000 gals 5484-97 ft, td 5503 ft.

Whitaker's Oil Co.'s Newton 1, 467 ft from n and 933 ft from w lines TE&L 2673, Bend 5207 ft, flow 127 bbls, ¾-in, acid 3000 gals 5462-79 ft.

**Cooke County:** Camball Oil Co.'s Campbell 1-A, 1890 ft from w and 330 ft from s lines in n-629 ac of e-1344 ac O. F. Leverett sur, abnd 765 ft.

**Montague County—Clingingsmith:** Sinclair Prairie's Clingingsmith 3, 990 ft out NWc blk 149, J. Olibarri sur, pump 147 bbls oil, 69 bbls water, acid 2500 gals, Bend 5996-6026 ft.

**Montague County — Forestburg:** Sinclair Prairie's Jones 6, 330 ft from ne and 180 ft from se lines I. Singletary sur, Marble Falls 7102 ft, abnd 7290 ft.

**Wichita County:** Fisher & Dudley's Warren 15, L. B. Taliaferro sur, abnd 1661 ft.

Hanlon & Buchanan's Burnett 17-A, H&GN 34, abnd 907 ft.

**Wilbarger County:** Consolidated Oil Co.'s Waggoner 1-H, 660 ft from w and 2310 ft from s lines H&TC 36, blk 6, lime 3787 ft, Bend 4030 ft, Miss 4398 ft, Ellenburger 4410 ft, abnd 4450 ft.

**Young County—Burns-Ragland:** L. T. Burns et al's Morrison 2, 523 ft from s and 1347 ft from e lines TE&L 246, Bend 4013 ft, Miss 4853 ft, flow 612 bbls, 1/16-in, natural, 4853-81 ft.

**Young County:** B. H. Rankin-Elliott Prod. Co.'s Stewart 1-C, 495 ft out SWc TE&L 2796 ft, abnd 3628 ft.

Phillips Pet. Co.'s Johnson-Pan 19-A, 760 ft from w and 150 ft from n lines lot 14, Richardson Bros. subdiv, E. W. Sergeant sur, pump 5 bbls, shot 10 qts 575-585 ft.

### NORTH TEXAS WATER INPUT WELLS

**Young County:** Cable Oil Co.'s Prideaux 1-W, 75 ft from e and 300 ft from s lines 345-ac tr, ne part A. Rohus sur A-40, sand 372-79 ft.

Worth Oil Co.'s Calvin 1-W, 400 ft from e and 5 ft from n lines 200-ac tr, A. Rohus sur, sand 547-55 ft, td 558 ft.

Worth Oil Co.'s Calvin 2-W, 400 ft from e and 305 ft from n lines 200-ac tr, A. Rohus sur, sand 562-68 ft.

Worth Oil Co.'s Snider 2-W, 1200 ft from n and 75 ft from w lines Robt. Wilson sur A-1276, sand 586-600 ft.

Worth Oil Co.'s Snider 3-W, 900 ft from n and 75 ft from w lines Robt. Wilson sur, sand 565-575 ft.

Worth Oil Co.'s Snider 4-W, 600 ft from n and 75 ft from w lines Robt. Wilson sur, sand 563-77 ft, td 579 ft.

Worth Oil Co.'s Snider 5-W, 605 ft from n and 375 ft from w lines Robt. Wilson sur, sand 562-77 ft.

Worth Oil Co.'s Snider 6-W, 305 ft from n and 375 ft from w lines Robt. Wilson sur, sand 564-75 ft.

Worth Oil Co.'s Snider 7-W, 5 ft from n and 375 ft from w lines Robt. Wilson sur, sand 540-75 ft.

### NORTH TEXAS WATER DISPOSAL WELL DEEPENED

**Wilbarger County:** Phillips' Waggoner Est. 1-N, 467 ft n and 330 ft e of SWc sw nw H&TC 43, blk 4, otd 2361 ft, sand 2700-2706 ft.

### NORTH TEXAS WILDCAT COMPLETIONS

**Archer County—Failures:** Cochran & Cain's Turbeville 1, 330 ft out NWc sec 173, Robt. Carson sur, abnd 1522 ft.

Fortex Oil Corp.'s 330 ft from w and 1455 ft from s lines e-147-ac tr, blk 36, W. E. Roberts sur, abnd 1557 ft.

**Montague County—Failure:** L. S. Youngblood & Foree's Quillin 1, 1690 ft from w and 3490 ft from sw lines F. J. Bellows sur, abnd 7261 ft.

**Wilbarger County — Failure:** W. T. Waggoner Est.'s fee 1-JJ, J. S. Calhoun sur A-944, top Ellenburger 4555 ft, otd 4579 ft, abnd 4614 ft.

**Young County—Failures:** Chas. B. King's Dailey 2, 330 ft out m/e/ne corner 100-ac tr, S. Tynes sur, abnd 534 ft.

Roy Lee, trustee's Baze 1, 660 ft out SEc TE&L sec 354, top Bend 4103 ft, Barnett 4803 ft, Miss 4848 ft, abnd 4910 ft.

### NORTH TEXAS WILDCAT STARTS

**Cooke County:** Burk Royalty Co.'s J. W. Gladney 1, 330 ft out SEc of 186.6-ac tr Hunt CSL 24, lcn 2500-ft test.

**Montague County:** Continental's A. V. Fleming 1, 330 ft out SWc 115-ac tr, Fielding Secrest sur, lcn 6000-ft test.

Gaurd S. Marvin et al's J. E. Lemons 1, 1650 ft from w and 330 ft from s lines 255-ac tr, Mary Burnsides sur A-14, lcn 1750-ft test.

**Young County:** W. L. & C. W. Snoddy's A. Furr 1, 660 ft out NWc TE&L 330, 2¼ mi se Padgitt, lcn 5000-ft test.


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### WEST CENTRAL TEXAS FIELD COMPLETIONS

**Coleman County — Coker:** Anderson-Prichard Oil Corp.'s Coker 2, GH&H 72, blk 2, flow 136 bbls ½-in, natural, Morris sand 3043-47 ft.

**Stephens County:** Daniel Production Co.'s Pratt 2, 933 ft out NWc TE&L 1294, elev 1167 ft, abnd 3334 ft.

### WEST CENTRAL TEXAS WILDCAT COMPLETION

**Coleman County—Oil Discovery:** Cornelius Kroll and E. S. Behney's R. W. Starnes 1, 2350 ft from n and 2850 ft from w lines GH&H 2, blk 1, elev 1718 ft, Adams Branch 1435 ft, pump 12 bbls, shot 30 qts 2000-18 ft, td 2020 ft.

### WEST CENTRAL TEXAS WILDCAT START

**Jones County:** Merry Bros. & Perini's Largent 1, 660 ft out NWc lot 37, DeWitt CSL leag 149, lcn.

### TEXAS PANHANDLE COMPLETIONS

**Carson County:** Cities Service's Whittemore 1, c nw nw I&GN 14, blk 7, pump 212 bbls, 3175-92 ft, td 3198 ft.

Skelly's Schafer 165, 2200 ft out NEc I&GN 197, blk 3, pump 384 bbls, shot 520 qts 3005-3113 ft.

**Gray County:** Magnolia's Fee (Tr 227) 56, I&GN 15, blk 3, pump 23 bbls, 3010-25 ft.

**Hutchinson County:** J. M. Huber Corp.'s Mayfield 3, nw se sw sec 4, blk R-2, D&P sur, pump 182 bbls, 3238-55 ft.

J. M. Huber Corp.'s Stewart-Smith 1, 2640 ft from e and 1320 ft from s lines ne AB&M 21, blk M-16, flow 53 bbls oil and 9,500,000 gas 2-in, acid 1000 gals 3231-43 ft, td 3249 ft.

J. M. Huber Corp.'s Weatherly 23, 700 ft from n and 550 ft from e lines nw¼ sec 25, blk Y, pump 340 bbls, 3000-60 ft.

**Moore County:** Phillips' W. H. Taylor-Lor 1, c T&NO 243, blk 3-T, 91,000,000 gas, 328 lbs rp, acid 5000 gals, td 3200 ft, pb to 3165 ft.

## East Texas

### *Nacogdoches Wildcat Has Water in Glen Rose*

Nacogdoches County deep prospect flows salt water from first Glen Rose, and test pending in more promising zones. Initial drilling program in Coke field concluded with 27 producers and 2 failures. Second Trinity test for Tehuacana pool coring Pettit.

**Nacogdoches County:** The Texas Company's Strahan 1, 7 miles northeast Nacogdoches, flowed salt water and rotary mud with show gas from perforations opposite upper Glen Rose at 7230-74 feet. Packer failed to hold when another drill-stem test was made from additional perforations at 7300-64 feet. Next perforations are to be made opposite porous zones in Travis Peak, topped at 8615 feet, with gas-distillate production due to this horizon. Strahan 1 is bottomed at 9295 feet, with 5½-inch at 9054 feet.

**Limestone County:** Zephyr Oil Company's Peeples 2-B, Tehuacana area, entered Pettit at 5020 feet, and was coring 5090 feet.

**Bowie County:** Bowlen et al's Simms 1, Smackover lime project, was cutting out parted drill pipe with hole bottomed at 8609 feet in red shale, topped at 8400 feet.

**Wood County:** Development of Coke field was concluded when Amerada's McCreight 2, north outpost, flowed 32 barrels oil on 3-hour gauge through ½-inch choke, having perforated at 6314-31 feet in Paluxy sand. Amerada is due to drill another test on this lease.

**Wildcats:** B. F. Phillips et al's Starnes 1, fourth test for the Friendship structure, Smith County, logged base Pecan at 3139 feet, and drilling 3690 feet. In Van Zandt County, A. F. Carter et al's Hazel 1, mile north of Fruitvale, logged Austin chalk 3400-4000 feet, and drilling shale 4105 feet. Hunt Oil Company's Sparks 1, Rains County, drilling 5210 feet in Georgetown, topped 4807 feet, elevation 541 feet, on Paluxy sand contract.

### EAST TEXAS FIELD COMPLETIONS

**Smith County—Chapel Hill:** Chapel Hill Gas System's Bradley 1, center 17-ac tr, T. P. Payne sur, flow 73 bbls, ⅛-in, acid 7000 gals Pettit perf 8048-8122 ft, td 8151 ft.

Sinclair Prairie's Sanders 1, 660 ft out NEc 49.6-ac tr, R. H. Andrews sur, elev 498 ft, Pettit 8142 ft, flow 72 bbls, ⅛-in, acid 5000 gals perf 8248-84 ft, td 8386 ft.

**Wood County—Hawkins:** Humble's Atkins 6, 467 ft s and 1980 ft e of NWc J. P. Mosely sur, flow 404 bbls, ¼-in, natural, perf, Woodbine 4459-4845 ft.

Humble's Minshew 5, 1650 ft e and 467 ft n of SWc John Pollock sur, abnd 5074 ft.

### EAST TEXAS WILDCAT COMPLETIONS

**Upshur County — Failure:** Blackwell O&G Co.'s Briggs 1, 3250 ft from e and 5650 ft from s lines J. B. B. Davenport sur, blk 55, Austin 3670-3712 ft, 1st. Woodbine water 3712-26 ft, Georgetown 4048 ft, abnd 4100 ft.

### EAST TEXAS WILDCAT STARTS

**Franklin County:** Tide Water-Seaboard's A. J. Bacon 1, 440 ft out NEc 123-ac tr, blk 12, John Maximillian sur, lcn 9000-ft Travis Peak test.

**Smith County:** B. F. Phillips et al's M. Starnes 1, 800 ft from n and 660 ft from e and 2338 ft from w lines 160-ac tr, Samuel Epps sur, 1½ mi nw Friendship, rur for Paluxy test.

**Van Zandt County:** Oscar Donley et al's A. L. Clark 1, 2080 ft from n and 775 ft from w lines J. A. Parker sur, mim for Woodbine test.

## Southwest Texas

### *Making Test of Wildcat Showing Oil in Duval*

Casing set in Duval County wildcat. New pay found at Frost, Starr County. Tynan discovery gauged.

**Duval County:** George W. Strake has run casing to make flow test in Ira Yates 1, wildcat discovery in Pettus sand northwest of Fitzsimmons field, northeast portion of county. Sand was cored at 3691-3724 ft carrying oil and gas odor. Another sand was found at 3724-31 ft which yielded 220 ft of 42.7-gravity oil on a drill-stem test along with 40 ft of oil-cut mud and 90 ft of oil-cut salt water. The test was for 25 minutes duration and showed 150 pounds bottom-hole pressure with closed pressure of 950 pounds. This discovery is located in the southwest corner of an 80-acre tract, a farmout from Mills Bennett and Stanolind Oil & Gas Co., SA&MG 1, 3½ miles north of Fitzsimmons field.

**Starr County:** Sun Oil Co. is drilling and coring deeper in Garcia Land & Livestock 1-C, northeast outpost at Frost after recovering 360 ft of oil and 90 ft of mud on a 12-minute drill-stem test in a new sand at 5004-08 ft. Sand showing oil was cored at 5000-12 ft, the test showing 510 pounds working pressure with 1050 pounds bottom-hole pressure. A test in the discovery pay section at 4194-4200 ft recovered 75 ft of oily mud, 80 ft of oil and 150 ft of salt water. Other sand sections were found at 4130-34 and 4144-48 ft which showed a little oil and gas. This outpost is 7320 ft from north line of porcion 97 in Y. Trevino survey.

**Bee County:** Stanolind has completed gauge on Ulke 1, wildcat discovery 4½ miles northwest of Tynan, flowing 70 bbls of fluid in 24 hours from perforations at 4212-13 ft in Vicksburg sand, 50 percent being oil. Tubing pressure was 1300, pounds, casing 1800 pounds. Vicksburg pay was cored at 4197-4230 ft with gas in top portion, oil in middle, and water in bottom portion. Location is on 300-acre lease in northerly north corner of Hiram H. Williams survey.

**Karnes County:** Phillips Petroleum Co. and Adams Oil & Gas Co. are opening a new field three miles southeast of Kenedy with Reasoner 1 showing 576 ft of oil on drill-stem test at 6580-90 ft in Wilcox. After going through shale break, operators found another sand at 6592-6600 ft that yielded about 100 ft of oil and considerable salt water on drill stem. The discovery is in west corner of 107-acre lease in block 13, Carlos Martinez grant, A-6.

**DeWitt County:** Adams Oil & Gas Co. is coring below 9100 ft in Pieper 1, northeast outpost at Yorktown. Scheduled to be drilled to 10,000 ft as Wilcox test, the Carrizo section was topped at 7075 ft and sand carrying distillate odor was found at 7187-7200 ft.

### LOWER TEXAS COAST FIELD COMPLETIONS

**Bee County—South Caesar:** Atlantic and Southwood's Grissom 1, 467 ft fr n&el's 83-ac tr, P. B. McEarly sur, A-236, 5½-in 6616 ft, perf 6606-10 ft, 116 bbls, 5/32-in, td 6625 ft.

**Jackson County—Stewart:** Harrison & Abercrombie's Taylor 1, 467 ft fr s&el's blk 2, 55-ac lse, George Sutherland sur, abnd 7150 ft.

**Jackson County—Mayo:** Pan American's Bigott 1, 535 ft fr sl & 467 ft fr el 80-ac tr, Morris & Cummins sur 11, 7-in 6200 ft, perf 5405-12 ft, flow 16 bbls oil, 1,490,000 gas, pay 5398 ft, td 7646 ft.

P. R. Rutherford's Meyer 1, 660 ft fr n&wl's 160-ac tr, George Sutherland sur, A-75, abnd 6500 ft.

**Jackson County—Francitas:** Skelly's Taylor Unit 1, 518 ft fr nwl & 467 ft fr nel of 40-ac unit, blk 6, Schwind & Maher's P. Green sur, A-25, 5½-in 7998 ft, perf 7391-95 ft and 7399-7403 ft, 64 bbls, ⅛-in, td 8000 ft.

**Jackson County—Harmon:** Stanolind's McCrory & Westoff 1, 485 ft fr e'ly wl & 467 ft fr n'ly nl of M. L. York sur 22, A-312, 5½-in 5520 ft, perf 5355-69 ft, 16 bbls 7/32-in, td 5571 ft.

**Jackson County—Ganado:** Texas Co.'s Ross 2, 489 ft fr wl & 660 ft fr nl of e 100-ac tr, G. F. & M. T. Thomas sur 2, A-290, t/sand 5458 ft, 5½-in 6478 ft, perf 6458-66 ft, 198 bbls, ⅛-in, tr 6480 ft.

**Jackson County—Mustang Creek:** Guy I. Warren's Smith 1, 69-ac lse, William Menefee sur, A-53, abnd 6800 ft.

**Jim Wells County—Seeligson:** Shell's Seeligson 17, 759 ft fr n'ly sl & 4573 ft fr nl & 574 ft fr w'ly wl of 990-ac tr, Willis Millican sur 335, 5½ & 4½-in to 6100 ft, perf 6016-54 ft, 128 bbls, 7/64-in, td 6100 ft.

Sun's Canales 21, 3135 ft fr el & 1980 ft fr nl A. Canales-W. L. Dickson sur 180, 3000-ac lse, 7-in 6010 ft, perf 5240-45 ft, 132 bbls, 3/16-in, td 6020 ft.

**San Patricio County—Midway:** F. M. Boykin's Olle 1, 467 ft fr nel & wl & 2100 ft fr sl 131-ac lse, fractional ne¼ sec 71, abnd 7012 ft.

### LOWER TEXAS COAST WILDCAT COMPLETION

**Victoria County—Failure:** Rowan & Hope's McCampbell 1, 1830 ft fr nel & 660 ft fr nwl of 240-ac lse, Valentin Garcia sur, Inez area, abnd 6501 ft.

### LOWER TEXAS COAST WILDCAT STARTS

**Jim Wells County:** Smith & Story's Earhart 1, Armagosa area, 1350 ft fr s & 2675 ft fr wl J. Graham sur, A-180, 640-ac lse, lcn 3000-ft test.

Southern Minerals' Hawkins & Wallis 1, San Diego area, lcn 6000-ft test.

**Nueces County:** Phillips Petroleum Co.'s Huermann 1, Saxet area, 660 ft fr n&wl of 240-ac lse, Charles Land sur 412, lcn 7600-ft test.

### SOUTHWEST TEXAS FIELD COMPLETIONS

**Duval County—Kohler:** Ogden & Voyles' Richardson 2, 990 ft fr wl & 2140 ft fr nl GB&CNG 3, 2220-ac lse, abnd 2705 ft.

**Jim Hogg County—Colorado:** Humble's East 3-D, 660 ft fr w'ly wl & 660 ft fr s'ly nl 659-ac lse, lot 78, subdn 2, share 3, Las Moretas gr, abnd 3277 ft.

**Starr County—Rincon:** Continental's Slick 5-E, 330 ft fr wl & 1653 ft fr nl CCSD&RGNG 537, 640-ac lse, 6-in 3941 ft, perf 3895-3905 ft, 220 bbls, 3/16-in, td 4150 ft.

### SOUTHWEST TEXAS WILDCAT COMPLETIONS

**Duval County—Failure:** Circle Oil Co.'s Reyes 1, Kreis area, 160-ac lse, J. Poitevent sur 513, td 3510 ft.

**Jim Hogg County—Failure:** Sun's East 1, Randado area, 6500 ft fr s & 7000 ft fr wl 18,636-ac tr, LaNoria de Santo Domingo gr, abnd 4916 ft.

Sun's East 2, 3300 ft fr w'ly wl & 1980 ft fr s'ly nl sec 6, subdvn of 8400-ac lse, San Domingo de Arriba gr, abnd 4998 ft.

**Webb County — Failure:** O. W. Killam's Bruni Est. 1, Bruni area, 1280-ac lse, sur 455 ft, abnd 3968 ft.

### SOUTHWEST TEXAS WILDCAT STARTS

**Jim Hogg County:** H. B. Zachry's East 1,

400 ft fr e & 1980 ft fr nl blk 34, W. P. Allen subdvn, El Randado gr, lcn.

**McMullen County:** Hickok & Reynolds' Shiner Rch 1, 660 ft fr n&el se sec 27, Shiner Rch, H. M. Brewer sur, lcn.

Stanolind's Henry 1, Tilden area, 660 ft fr el & 2010 ft fr sl of 227-ac tr, William Kuykendall sur 28, lcn 6500-ft test.

**SOUTH CENTRAL TEXAS WILDCAT STARTS**

**Guadalupe County:** H. H. Weinert and A. B. Bauchman's Gieseck 1, 467 ft fr w & 3000 ft fr sl 105-ac tr, Green DeWitt lge, Edwards lime test.

**Williamson County:** J. C. Tittle's Perry Est. 1, Thrall area, 320-ac lse, Pedro Garza sur, lcn 900-ft test.

## Texas Gulf Coast

### Wharton County Wildcat Testing Favorable Oil Sands

Pipe set in Wharton County wildcat. Trying to sidetrack deep hole at Hall's Bayou, Brazoria County.

**Wharton County:** First flow test is being made on Continental Oil Company's Allenson 1, wildcat north of Louise, after drilling to 5504 ft and setting pipe to 4430 ft. Although details are lacking, the sand conditions in this wildcat are believed to be similar to those in wells in adjacent Jackson County. Location is in WCRR 41, Abstract 364.

**Brazoria County:** Humble Oil & Refining Company is attempting to sidetrack Houston Farms Development 1-B, wildcat on Hall's Bayou prospect, after sticking drill pipe at 13,253 ft, about 100 ft short of the depth record on the Upper Texas Coast. The well is contracted to 14,000 ft, and although details have not been released, operators are credited with finding high pressure gas sands and possibly oil sections. It is close to a deep test drilled by Strake Petroleum Company on the Griffith tract in 1941, which flowed some oil but was later abandoned due to mechanical troubles. The Humble well is in Section 2, Perry and Austin survey, A-109. If the 14,000-ft objective is reached, it will be the deepest hole in Texas.

**Harris County:** Amerada Petroleum Corporation and Stanolind Oil & Gas Company are completing Carpenter 2 at Satsuma in Cook Mountain sand, third well to be deepened from a shallow sand to the deeper and more prolific oil sands. Perforations were made at 7270-75 ft after drilling to 7278 ft. This small field has several wells producing from a comparatively shallow depth, all of which may be drilled deeper to the Cook Mountain. The new oil well is in Francis Fry survey.

**Wildcats:** Superior Oil Company of California is spudding a new wildcat 3 miles northeast of Van Vleck in Matagorda County. The well is Peterson 1 in A. S. Sojourner survey, A-13. It is projected to 10,000 ft, which will be inside Frio sands.

Magnolia Petroleum has spudded Kountze-Stewart 1, wildcat south of Hillje field, Wharton County. Located in BS&F 10, the well is projected to below 8000 ft, which will be the deepest any well has ever drilled in the area, thus giving a test of Frio-Vicksburg sands.

**Wilcox Tests:** Shell Oil Company has spudded Peden 1, wildcat on Willow Spring prospect of Harris County. The well is projected to the Wilcox to around 10,500 ft. It is in John Brock survey, A-122. Superior Oil Company of California is still fishing in Foley 1, wildcat in Deering area of Montgomery. The hole is bottomed at 12,489 ft, the well located in Henry Dunman One-Third League.

**TEXAS GULF COAST FIELD COMPLETION**

**Wharton County—Boling:** Danciger's Hawes Est. 1-A, 40-ac tr, S. F. Austin One-Third Lge, 5½-in 3093 ft, sand 3060 ft, flow 484 bbls, ¼-in, td 3093 ft.

**TEXAS GULF COAST WILDCAT COMPLETION**

**Wharton County—Failure:** Pan American's Babcock 1, North Louise area, 345-ac tr, S. P. Middleton sur, abnd 5788 ft.

**TEXAS GULF COAST WILDCAT STARTS**

**Chambers County:** Standard of Texas' State 1-136, Smith Point area, 660 ft fr ne & nwl tract 136, lcn 10,000-ft test.

**Harris County:** Cities Service's Tucker 1, Cypress area, 1980 ft fr n & 660 ft fr wl H&TC 30, blk 2, lcn 8000-ft test.

**Polk County:** Humble's Whitforth 1, North Livingston area, 320-ac tr, A. Viesca sur 77, lcn 12,000-ft test.

**Waller County:** Stanolind's Patterson 1, 3 mi n Katy field, 660 ft fr n&el sec 96, J. M. Bennett sur, lcn 7750-ft test.

## Louisiana Gulf Coast

### North Chalkley Wildcat Showing Gas, Perhaps Oil

New field indicated in North Chalkley area of Cameron Parish as wildcat blows out. Pipe set in Hayes area well.

**Cameron Parish:** Jack W. Frazier has opened a gas field and possibly a new oil reserve in the North Chalkley area with Sweet Lake Land & Oil Company 1 blowing out from total depth of 8760 feet in Miocene, sticking drill pipe, and flowing a large volume of gas. Sand was encountered at 8715-45 feet. The well has been brought under control and operator is attempting to clean hole out to resume operations. The well is in NE NE 12-12s-7w on farmout from Stanolind Oil & Gas Company. Humble


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Oil & Refining Company and Stanolind previously had drilled wells in the general area.

**Calcasieu Parish:** Gulf Refining Company has set 7-inch production pipe to 11,816 feet in Amoskeag Savings Bank 1-H, wildcat in Hayes area. Bottomed at 11,840 feet, the well showed considerable pressure at total depth. Gulf had one well in this area to blow out in 1941. Latest test is in SE NW 18-11s-5w.

**Discovery:** Union Sulphur Company's Gueno Estate 1, wildcat discovery in Branch area of Acadia Parish, is still reported to be flowing around 600 barrels of 51-gravity distillate daily along with 50,000,000 cubic feet of gas through 4-inch flow lines. The producer blew out and caught on fire several weeks ago. The blaze was controlled later and the well flowed approximately 2400 barrels of distillate and large volume of gas daily before it was finally pinched back.

The company is drilling around 9400 ft in Gueno Estate 2, Section 41-8s-2e, northwest of the wild well and is a relief well. Hole is being deviated to kill the discovery producer.

**Acadia Parish:** Sun Oil Company is preparing to spud Daily 1, wildcat on Egan prospect 7 miles west of Crowley. It is located in SW 31-9s-1w, and will be a deep test.

**Assumption Parish:** George Echols is fishing for stuck drill pipe in Kessler & Sternfels 1, wildcat on the east flank of Napoleonville dome. Pipe was stuck in heaving shale while drilling around 10,467 feet in Miocene. The well, located in Section 136-12s-14e, is reported to have cored around 18 feet of sand showing for production slightly below 9000 feet. William Helis et al are drilling around 10,000 feet in Armelise Planting 1, wildcat on the southeast flank of the same dome.

**SOUTH LOUISIANA FIELD COMPLETIONS**

**East Baton Rouge Parish — University:** Sugarfield Oil Co.'s Lerner-Victory 1, 1080 ft n 73 deg e fr s cor sec 46, th 130 ft n 50 deg e in sec 45-7s-1e, 5¼-in 10,100 ft, perf 6772-75 ft, 130 bbls, 7/64-in, td 10,160 ft.

**Calcasieu Parish—Starks:** W. T. Burton's Lutcher-Moore 7, 1980 ft s&w of ne 23-9s-12w, abnd 8810 ft.

**Jefferson Parish—Bay DeChene:** Texas Co.'s LaFourche Basin 3-A, n 75 deg 27 mins e 9805 ft fr USCGS Monument "Hackberry" in 33-19s-24e, 7-in 9082 ft, abnd 9365 ft salt.

**Jefferson Davis Parish—West Mermentau:** H. M. Naylor's Acadia Development 3, s 62 deg 15 mins e 5704 ft, n 27 deg 15 mins e 2230 ft fr sw 40-10s-3w in 12-10s-2w, 5½-in 10,288 ft, perf 10,192-227 ft, 281 bbls 50.7-gr, td 10,228 ft.

**St. Martin Parish — West Lake Verrette:** Shell's State-Jeanerette 1, s 89 deg 25 mins w 817 ft alg sl, 15 mins fr se cor, th n 00 deg 29 mins w 665 ft to lcn in 15-14s-12e, 5½-in 11,505 ft, perf 11,000 ft, 243 bbls, 1/8-in, td 11,530 ft.

**SOUTH LOUISIANA WILDCAT COMPLETION**

**St. Charles Parish—Failure:** L. J. Roussel's Ellington 1, Bouette area, n Paradis field, 1357 ft n & 3940 ft e of sw c 119-13s-20e, abnd 4521 ft.

## Arkansas

**ARKANSAS FIELD COMPLETION**

**Columbia County — Macedonia:** Arkansas Fuel & Skelly Oil's Snider Wise Unit 1, c s½ ne 20-18n-21w, flow 324 bbls distillate, 18 hrs, 3/16-in, tp 2350, cp 0, pkr set, td 8901 ft.

**ARKANSAS WILDCAT STARTS**

**Columbia County:** Roy Lee's Pickler 2, ne sw 23-17s-21w, dr.

**North Carterville Area:** Hunt's Pinewood A-1, c-se-nw 9-20s-22w, dr.

**Union County:** Carter Oil Co.'s Foyil 1, c nw nw 12-19s-15w, dr.

Fohs, Pilgrim & Root's Grace 1, nw se 31-17s-14w, dr.

## North Louisiana

### Gas Encountered in Claiborne Parish Test

Gas revealed in Pettit lime horizon in Claiborne Parish wildcat. Shreveport field edges into business district, Caddo Parish. Four prospects flank North Carterville discovery, Bossier Parish.

**Claiborne Parish:** Drilling has been halted at Sylvestre's Meadows 1, wildcat, NE SW 23-22n-7w. A favorable section was encountered revealing gas in Pettit lime at 5820-30 feet. Meadows 1, drilled to 6012 feet, is 4 miles southeast of Haynesville production.

**Bossier Parish—North Carterville:** H. L. Hunt's deep Pettit lime discovery, Nebo 1, SW SE 3-23n-12w, to be officially gauged when outlet pipe line is completed, now has four tests flanking this well, three miles north of shallow Carterville Buckrange and Tokio production.

**Caddo Parish — Shreveport:** Sam Sklar's Waller 1, SW NE 25-18s-14w, just one block from Market street and a location south extension for Shreveport field proper flowed approximately 60 barrels from Pettit lime, the field producing horizon, in a 24-hour test. Pending official test Waller 1 is shut in.

**NORTH LOUISIANA FIELD COMPLETIONS**

**Caddo Parish — Caddo:** Magnolia's Doan-Thigpen 44, se 6-20n-14w, awtg gauge, td 1465 ft.

**Caddo—Pine Island:** Sloan Wells' Thigpen-Herold 2-A, sw se sw, tested dry at 2465 ft.

**Claiborne Parish — Haynesville:** Midstates Waller-Beckett, sw ne 2-23n-8w, flow 329 bbls, Pettit lime, 10 hrs, ½ in, tp 200, cp 655, td 5435 ft.

**NORTH LOUISIANA WILDCAT COMPLETIONS**

**Catahoula Parish:** H. L. Hunt's Louisiana Central 1, ne nw 19-19n-6e, abnd 4560 ft.

**Madison Parish:** C. H. Murphy's Mahony 1, se sw 34-17n-13e, abnd 6005 ft.

**NORTH LOUISIANA WILDCAT STARTS**

**Bienville Parish:** Placid's Nebo Oil Co.'s A-1, c sw ne 11-15n-7w, dr.

**Bossier Parish — North Carterville Area:** Hunt's Nebo Oil Co.'s 2, c sw sw 3-23n-12w, dr.

Hunt's J. F. Oglee 1, c ne ne 10-23n-12w, dr.

Hunt's Pardee Co. A-1, nw se 18-23n-11w, dr.

**Bossier Parish:** British-American's Blocker 1, 1-22n-13w, dr.

**Caddo Parish:** Beene's Bostwick 1, nw se 11-18n-15w.

Harris & Owen's Fuller 1, c se ne 4-22n-15w, mim.

**Claiborne Parish:** Gulf's Miller 1, c ne ne 14-20n-8w, dr.

**Morehouse Parish:** Merren's Bonner 1, c nw nw 23-22n-7e, dr.

**Natchitoches Parish:** Bayou Pierre's Brown 1, sw sw 25-10n-8w, mim.

**Red River Parish:** O'Meara's Franklin Realty Co. 1, ne sw 24-11n-10w, mir.

**Union Parish:** Hunt's Frost 1, c sw ne 18-23n-1e, dr.

## Mississippi

### Test Distillate Show in Lincoln County Wildcat

Lincoln County deep zone project. North Clarke County wildcat to prospect. Discovery sands up.

**Lincoln County:** California Co.'s G.


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Edited by A. I. LEVORSEN

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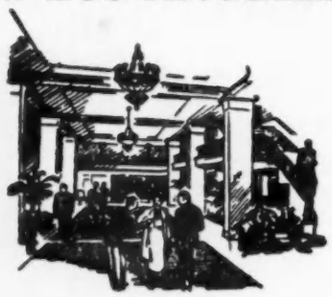

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T. Smith 1, 4-7n-7e, is reported to have encountered gas distillate at 10,300-foot horizon. Operators are moving in pipe to test. G. T. Smith 1, wildcat, drilled to 10,443 feet and location is approximately 5 miles northwest of Brookhaven.

**Clarke County:** Harry Elliott of Natchez is moving in rig to drill Long-Bell 1, 24-4n-16e, 10 miles north of A. B. Irion's discovery, Long-Bell 1, 10-2n-16e. Irion's test, now reported to have sanded up, previously pumped estimate of 125 barrels emptying into pits from Eutaw.

**MISSISSIPPI WILDCAT STARTS**

**Adams County:** Pure's McDowell 1, 1-6n-4w, fish.

**Claiborne County:** Amerada's Roney 1, 66-11n-2w, dr.

**Issaquena County:** John Allen's Stock & Walker 1, 29-13n-8w, dr.
Frontier's Mann 1, 24-11n-8w, dr.
Hunt's Delaney 1, 26-13n-8w, dr.

**Madison County:** Love Petroleum Co.'s Jones 1, 19-9n-1e, dr.

**Sharkey County:** Hunt's Cameron 1, 6-13n-6w, dr.
Texas Co.'s Linzey 1, 19-13n-5w, spud.

**Simpson County:** Carter's Allison 1, 17-1n-4e, dr.

## California

### *Intensive Drilling Started In Dormant Heavy-Oil Fields*

In quest of urgently needed new supplies of low-gravity oil, California operators have initialed intensified development on long-dormant parcels of old properties. Within the past fortnight 26 locations have been announced, and indications are that many more will follow.

In all cases the wells are in old fields, tapping shallow zones not expected to yield very large daily production, but which can be depended upon quickly to increase the state's output of heavy crude. Although classified as proven ground, these properties long had remained undrilled because in previous years heavy-oil stocks had been excessive and poor prices ruled.

Standard Oil Company of California leads in the new move, the total of such locations announced by that company now having reached 17, of which 10 are in Midway-Sunset, 5 in Buena Vista, both in Kern County, and 2 in Coalinga oil field, Fresno County. Also in Coalinga oil field Shell Oil Company has staked 6 new locations and Belridge Oil Company announces 3 new starts in Belridge-South, Kern County, where that company already has under way considerable shallow drilling.

**Fresno County:** The Texas Company is preparing to abandon Boychester 83-18, wildcat in Section 18-21-15, in Coalinga area, at 4351 feet, no showings of importance having been encountered.

In the Kingsburg area, Superior Oil Company has started a wildcat in Section 29-16-22.

**Kern County:** Tide Water Associated Oil Company has staked location in Section 17-30-26 for an outpost test of the recently discovered east extension of Strand field.

**Los Angeles County:** Union Oil Company's wildcat, Newhall Land & Farming 1, drilled in search of an extension of the Newhall-Potrero field, was unsuccessful and is being abandoned at 7004 feet in hard, fractured shale of the Miocene.

**Solano County:** Standard's outpost test, Suisun Comm. 2-1, in Section 25-3-1, Fairfield area, was abandoned at 7300 feet, after failure to recover fish. Another try will be made in Suisum Comm. 2-1A in the northwest corner of the section, location for which has been staked.

**CALIFORNIA FIELD COMPLETIONS**

**Fresno County—Coalinga Old Field:** General Pet. Corp.'s Esperanza 106, 328 s, 452 e nwc ne sw 6-20-15, pump 75 bbls 13-gr, perf 1195-1308, 1534-1591, 1607-1638 ft, td 1728 ft, pd 1638 ft.

**Fresno County—Riverdale:** Amerada's Zanolini 36-23, 1065 ft s, 1650 e w¼c 23-17-17, flow, no estimate, perf 6645-6665 ft, acidized 1000 gals, td 6900 ft, pd 6845 ft.

**Kern County — Belridge South:** Belridge's 46-33, 1925 ft n, 2063 e swc 33-28-21, pump 75 bbls 27-gr, perf 406-850 ft, td 850 ft.
Belridge's 55A-33, 2251 n, 2252 w sec 33-28-21, pump 60 bbls 17.6-gr, perf 347-800 ft, td 800 ft.
Belridge's 56-33, 1925 ft n, 2593 w sec 33-28-21, pump 60 bbls 22.4-gr, perf 388-815 ft, td 815 ft.
General Pet. Corp.'s Marina 16A-3, 735 ft s, 2738 e w¼c 3-29-21, pump 33 bbls 16.6-gr, perf 666-771, 923-944, 964-1054 ft, td 1115 ft, pd 1054 ft.

**Kern County — Fruitvale:** Western Gulf's Sawyer & Reed 3, 2205 ft s, 1671 w nec 27-29-27, flow 380 bbls 16.9-gr, perf 4445-3590 ft, td 4499 ft. Deepened from old bottom 3440 ft.

**Kern County — McKittrick:** Tide Water's Giant 16, 11-30-21, pump 28 bbls, td 1067 ft.

**Kern County—Midway-Sunset:** North American Oil Consolidated's Lockwood 40-A, 697 ft n, 742 w s¼c 16-32-23, pump 42 bbls, td 1332 ft, pd 1210 ft.
Standard's 116-31e, 1400 ft s, 1020 w nec 31-12-23, pump 110 bbls 27.8-gr, 27 ft perf 2170 ft, td 2173 ft.

**Kern County—Mount Poso:** Shell's Vedder Rall 22, 2283 ft n, 1377 e swc 9-27-28, pump 170 bbls, 70 ft perf 1990 ft, td 1990 ft.

**Kern County—Poso Creek-Premier:** Standard's 6-9, 276 ft s, 330 e w¼c 9-28-27, pump 9 bbls, 48 ft perf 2732 ft, td 2844 ft, pd 2732 ft.

**Kern County—Round Mountain:** D. G. Vedder's Bell 12, 240 ft n, 660 w e¼c 12-28-28, pump 110 bbls 14.5-gr, 33 ft perf 1882 ft, td 1882 ft.

**Kern County — Williams-Antelope Hills:** Shell's Williams 65-6, 2893 ft n, 3761 e nwc 6-28-20, flow 264 bbls 16.5-gr, 124 ft perf 2315 ft, packer 2107 ft, ½-in, 50/0 lbs, td 2320 ft.
Texas' Voight 54-6, 330 ft n, 330 e c 6-28-20, flow 200 bbls 17-gr, 20/64-in, 25-100/50-100 lbs, 150 ft perf 2302 ft, td 2305 ft.

**Los Angeles County—Wilmington:** Flintkote Co.'s No. 1, 213 ely on c/l "M" from Figueroa thence 187 ft nly at r/a, pump 97 bbls 18-gr, perf 2783-3770, 3710-3560, 3385-3375, 3280-3080 ft, td 3783 ft.

**Orange County—Huntington Beach:** W. E. Medearis' No. 1, pump 4 bbls 14-gr, perfs 2100-1960, 1870-1825 ft, td 4294 ft.

**Santa Barbara County—Cat Canyon:** Pacific Western's Los Alamos 19, 5610 sly 330 ft ely nwc Los Alamos Rancho, Comp to sump, no estimate, 606 ft perf 5712 ft, td 5716 ft.

**CALIFORNIA WILDCAT COMPLETIONS**

**Kern County—Failures—Round Mountain:** General Pet. Corp.'s Bishop 1, 332 ft n, 340 e swc 14-28-28, abnd 2990 ft in hard gray sand, top Vedder 2688 ft.
Trico Oil & Gas Co.'s Coffee 11, 465 ft n, 407 w w¼c 8-28-29, abnd 1718 ft in gray sand, top barren Vedder 1653 ft.
D. G. Vedder's Bell 14, 700 ft n, 1085 w e¼c 12-28-28, abnd 2030 ft in gray sand, top barren Vedder 2016 ft.

**CALIFORNIA WILDCAT STARTS**

**Kern County:** T. W. Burnham's Rancho 1, 34-12-19 rig, Comanche Point area.

**Sacramento County:** D. D. Feldman's Unit Plan 1, 8-7-6, lcn, Elk Grove area.

## Michigan

### *Increase in Wildcat Activity; Deep Tests Setback*

A shallow sand gas discovery and a noted increase in wildcat starts and exploratory drilling constituted the brightest spots in the closing week of 1942. Deep drilling, one of the year's outstanding trends, produced several setbacks the final week.

**Mecosta County:** Belvidere Oil Co.'s

State 1, C NW 11-16n-7w, Fork Township, completed in the Michigan Stray sand for 1,000,000 ft of gas per day at 1488½ ft. Test showed 600 lbs rock pressure after an 8-hr test. Belvidere's wildcat is 3 miles east of the Fork oil pool.

**Roscommon County:** Sun Oil Co.'s State A-2, N½ NW SW 33-21n-3w, west flank of the Headquarters Traverse lime oil field, took cores from 5200 to 5303 ft in the Richfield-Sylvania section but had nothing indicating production. Test is first for the field in that horizon. A shallower horizon is producing sulphur oil from the Monroe between 4900 and 5100 ft.

**Allegan County:** Muskegon Oil Corp.'s Podurgiel 1, SW NW SE 29-4n-12w, was abandoned at 3308 ft after drilling into water at 3304 ft in the Niagaran lime. Test carried a show of black oil in the Monroe between 3035 and 3040 ft.

#### MICHIGAN FIELD COMPLETIONS

**Arenac County—Clayton:** Arenac Oil & Gas Co.'s Barnes 1, n½ ne ne 8-20n-4e, Stray sand, gauged 2,800,000 ft, 1213 ft.

**Gladwin County—Buckeye:** Sun Oil Co.'s Hays A-1, sw nw ne 21-18n-1e, Dundee lime, swab 36 bbls, 3640 ft.

**Roscommon County — Headquarters:** McClanahan Oil Co.'s State 1, n½ ne nw 29-24-1w, Richfield lime, swab 18 bbls, td 4199 ft.

**Van Buren County—North Bangor:** Harris Oil Co.'s Buyce 1, sw sw se 4-2s-16w, Traverse lime, dry, td 1034 ft.

Socony Vacuum Oil Co.'s Merriman 1, sw ne se 9-2s-16w, Traverse lime, dry, td 1019 ft.

#### MICHIGAN WILDCAT COMPLETIONS

**Allegan County — Failure:** Muskegon Oil Corp.'s Podurgiel 1, sw nw se 29-4n-12w, Niagaran 3279 ft, abnd 3320 ft.

**Cass County—Failures:** M. J. Doblinger's Marks 1, se nw nw 32-7s-13w, abnd 702 ft.

O. B. Custance's Jewell 1, se se ne 30-5s-15w, abnd 857 ft.

**Kent County—Failure:** James J. McGerry's Brown 1, s½ se ne 30-5n-11w, Traverse 2174 ft, abnd 2175 ft.

**Mecosta County—Gas Discovery:** Belvidere Oil Co.'s State 1, c nw 11-16n-7w, Stray sand 1477 ft, gauged 1,000,000 ft, td 1488½ ft.

**Mecosta County—Failure:** Gordon Oil Co.'s Helmer 1, s½ ne ne 17-15n-8w, Dundee 3768 ft, abnd 3920 ft.

#### MICHIGAN WILDCAT STARTS

**Allegan County:** Jetter & de Kraft's Selkirk 1, ne nw se 29-3n-11w, rig.

**Gratiot County:** Chartiers Oil Co.'s Hale 1, sw nw ne 35-11n-4w, rig.

**Isabella County:** Rowmor Corp.'s Latham 1, s½ se se 25-16n-6w, lcn.

**Lake County:** Bolger Oil Co.'s Coveny 1, n½ ne se 31-19n-11w, dr.

## Rocky Mountain States

### *Start Important Wildcat Test in Montana*

Northeastern Colorado wildcat at critical depth, gets saturated Muddy, but running low on Dakota. Pilot Butte, Wyoming, test disappointing. Start important Montana wildcat on trend from Elk Basin.

**New Raymer Wildcat:** Ramsey Petroleum Corp.'s Graham 1, SW SW 14-7n-59w, Buckingham-New Raymer area, Weld County, northeastern Colorado, cored 20 ft of saturated Muddy sand from 6650-70 ft, running 32 ft higher than Ramsey test ⅓ mile northwest drilled several years ago. However, well encountered thickening of interval to objective Dakota topped at 6775 ft and is running low on deeper sand and main objective. No drill-stem test made of Muddy, but gas volume estimated at 6.0 ft, made some oil in pits.

**Pilot Butte:** Superior Oil Co.'s Hoffman 2, NE SW 23-3n-1w, which indicated possible third deep discovery (Basal Tensleep) for Pilot Butte field, Wyoming, in 1942, tested some oil followed by water on drill stem at 6600 ft, plugged back to 6480 ft with no results, and 6236 ft in top of Tensleep open for 13 minutes made 8½ stands of mud and 6½ stands of muddy water, and has shut-down for the winter.

**Clarks Fork Test:** Northern Ordinance, Inc. is moving in rotary for Government 1, C NW NW 25-9s-22e, for a 6500-ft test through Dakota series, Clarks Fork structure, Carbon County, Montana. Clarks Fork, as mapped, is an elongated dome closed on the east by a major fault with displacement of 2000 ft. The structure is closely associated with the Elk Basin structure, where Minnelusa Oil Corp. and Yale Oil Corp. recently made a deep zone discovery in Tensleep.

#### COLORADO FIELD COMPLETIONS

**Rio Blanco County—Rangely:** Raven Oil & Refining Co.'s Fee 43, se nw ne 31-2n-102w, pump 20 bbls, 1423 ft.

Raven's Fee 44, cwl sw ne 31-2n-102w, abnd 1503 ft.

**Rio Blanco County—Wilson Creek:** Texas Co.'s Unit 9, sw se sw 35-3n-94w, flow 201 bbls, 6664 ft.

#### MONTANA FIELD COMPLETIONS

**Fallon County—Cedar Creek:** Montana Dakota Utilities Co.'s 174, cse 297n-60e, .162 ft gas, 97 lbs rp, Judith River 824-95 ft, td 1778 ft.

**Glacier County—Cut Bank:** A. P. Consolidated Oil Co.'s Kiesel 7, cnw 11-34n-6w, pump 40 bbls, 2892 ft.

Steele Creek Oil Co.'s Carmen 5, se nw ne 19-34n-5w, 5.0 ft gas, Sunburst 2670-2702 ft, Upper Cut Bank 2702-23 ft, td 2723 ft.

**Phillips County — Bowdoin:** Montana Dakota's 700, cnw 24-32n-34e, .648 ft gas, 210 lbs rp, Bowdoin 710-60 ft, Phillips 890-930 ft, td 951 ft.

Montana Dakota's 709, se nw se 6-32n-34e, .686 ft gas, 208 lbs rp, Bowdoin 703-53 ft, Phillips 839-939 ft, td 966 ft.

Montana Dakota's 710, cse 25-32n-34e, .396 ft gas, 207 lbs rp, Bowdoin 801-40 ft, Phillips 986-1010 ft, td 1075 ft.

Montana Dakota's 711, csw 25-32n-34e, .310


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ft gas, 206 lbs rp, Bowdoin 784-824 ft, Phillips 880-1040 ft, td 1056 ft.

Montana Dakota's 712, cne 36-32n-34e, .340 ft gas, 205 lbs rp, Bowdoin 792-832 ft, Phillips 902-1020 ft, td 1080 ft.

Montana Dakota's 713, cnw 36-32n-34e, .362 ft gas, 205 lbs rp, Bowdoin 751-96 ft, Phillips 876-1020 ft, td 1026 ft.

**Toole County — Kevin-Sunburst:** Big West Oil Co.'s Dahlquist 19, ne nw ne 28-35n-3w, abnd 1778 ft.

Texas Co.'s Bruins 15, nw ne se 9-35n-2w, pump 20 bbls, Ellis-Madison contact 1622 ft, td 1625 ft.

Henry Vanderpas' Fee 8, ne nw se 6-34n-1w, pump 10 bbls, Ellis-Madison contact 1427 ft, td 1428 ft.

### WYOMING FIELD COMPLETION

**Natrona County—Cole Creek:** General Petroleum's 35-16-S (State) nw ne se 16-35n-77w, pump 105 bbls, Shannon sand 4576-4612 ft, td 4612 ft.

### WYOMING WILDCAT COMPLETION

**Weston County—Failure—Howard Dome:** John Brorby's Hanson 1, nw ne nw 13-44n-64w, abnd, Lakota 3568 ft.

## Eastern States

### NEW YORK COMPLETIONS

**Allegany County:** Bradley Prod. Corp.'s Sprague farm, Alma, 6 bbls, Richburg, 1360 ft.

Franchot Oil Co.'s Murphy farm, Bolivar, 6 bbls, Richburg, 1377 ft.

B. & B. Oil Co.'s Curtis farm, Bolivar, 9 bbls, Richburg, 1369 ft.

Star Oil Co., Neff farm, Wirt, 10 bbls, Richburg, 1332 ft.

Bradley Prod. Corp.'s Rolls farm, Alma, 6 bbls, Richburg, 1352 ft.

Bradley Prod. Corp.'s Crandall farm, Alma, 7 bbls, Richburg, 1245 ft.

J. P. Herrick's Howe farm, Bolivar, 7 bbls, Richburg, 1440 ft.

Harold Gowdy et al's Frederick farm, Alma, 5 bbls, Fords Brook, 1315 ft.

Carter, Streeter & Bradley's Canfield farm, Wirt, 7 bbls, Wirt, 1350 ft.

I. & H. Oil Co.'s Clemons farm, Wirt, 5 bbls, Richburg, 1432 ft.

Sawnett Oil Co.'s Merritt farm, Genesee, 7 bbls, Richburg, 1444 ft.

### NEW YORK INTAKE WELLS

**Allegany County:** Bradley Prod. Corp.'s Bascom farm, Alma, Richburg, 1357 ft.

Bradley Prod. Corp.'s Duke farm, Alma, Richburg, 1444 ft.

Bradley Prod. Corp.'s Crandall farm, Alma, Richburg, 1278 ft.

H. H. Patterson et al's Black farm, Scio, Scio, 891 ft.

Rico Oil Co.'s Wright farm, Scio, Scio, 914 ft.

Messer Oil Co.'s Koehler farm, Clarksville, Richburg, 1425 ft.

Wightman & Conklin's Wetherby farm, Clarksville, Clarksville, 1434 ft.

### NEW YORK COMPLETIONS
### (Delayed Data)

**Allegany County:** Vosburg Oil Co.'s Green farm, Bolivar, 15 bbls, Richburg, 1262 ft.

Liberty Share Corp.'s Macken farm, Bolivar, 7 bbls, Richburg, 1436 ft.

South Bolivar Oil Co.'s McKelvey farm, Bolivar, 6 bbls, Richburg, 1345 ft.

Ebenezer Oil Co.'s Vincent farm, Scio, 12 bbls, Richburg, 1160 ft.

Messer Oil Corp.'s Allen farm, Alma, 8 bbls, Richburg, 1380 ft.

Russell Oil Co.'s Duke farm, Alma, 4 bbls, Richburg, 1272 ft.

Bradley Bros.' Sawyer farm, Bolivar, 9 bbls, Richburg, 1448 ft.

Clark Oil Co.'s Clark farm, Independence, 5 bbls, Fulmer, 1072 ft.

Bradley Prod. Corp.'s Smith-Gray farm, Clarksville, 7 bbls, Richburg, 1386 ft.

Healy Oil Co.'s Garthwait farm, Bolivar, 7 bbls, Waugh-Porter, 1545 ft.

Messer Oil Co.'s Koehler farm, Clarksville, 8 bbls, Richburg, 1456 ft.

Bradley Prod. Corp.'s Sprague farm, Alma, 6 bbls, Richburg, 1345 ft.

Albert Oil Co.'s Noble farm, Bolivar, 8 bbls, Richburg, 1276 ft.

South Bolivar Oil Co.'s McKelvey farm, Bolivar, 6 bbls, Richburg, 1366 ft.

Ebenezer Oil Co.'s Vincent farm, Scio, 14 bbls, Richburg, 1139 ft.

Bradley Prod. Corp.'s Rolls farm, Alma, 6 bbls, Richburg, 1332 ft.

Russell Oil Co.'s Duke farm, Alma, 4 bbls, Richburg, 1253 ft.

J. P. Herrick's Howe farm, Bolivar, 7 bbls, Richburg, 1453 ft.

Harold Gowdy et al's Frederick farm, Alma, 5 bbls, Fords Brook, 1282 ft.

Max Andrews' Clair farm, Wirt, 6 bbls, Richburg, 1359 ft.

Healy Oil Co.'s Garthwait farm, Bolivar, 7 bbls, Waugh-Porter, 1566 ft.

Max O'Connor Est.'s O'Connor farm, Genesee, 5 bbls, Richburg, 1378 ft.

### NEW YORK INTAKE WELLS
### (Delayed Data)

**Allegany County:** Vosburg Oil Co.'s Green farm, Bolivar, Richburg, 1275 ft.

South Bolivar Oil Co.'s McKelvey farm, Bolivar, Richburg, 1272 ft.

Otsquago Corp.'s Pike farm, Alma, Richburg, 1452 ft.

H. H. Patterson et al's Black farm, Scio, Scio, 920 ft.

Scio Oil & Gas Co.'s Clark farm, Scio, Scio, 819 ft.

C. H. Christman & Son's Cass farm, Wirt, Richburg, 1376 ft.

A. C. Shaner Oil Co.'s Childs farm, Clarksville, Clarksville, 1332 ft.

Bradley Prod. Corp.'s Bascom farm, Alma, Richburg, 1344 ft.

Messer Oil Co.'s "M," Allen farm, Alma, Richburg, 1388 ft.

Vossler Bros. et al's Quick farm, Alma, Richburg, 1627 ft.

H. H. Patterson et al's Black farm, Scio, Scio, 875 ft.

Rico Oil Co.'s Wright farm, Scio, Scio, 889 ft.

Daggett Oil Co.'s Daggett farm, Genesee, Richburg, 1432 ft.

Trinkle Est.'s Trinkle farm, Genesee, Richburg, 1377 ft.

### OHIO COMPLETIONS

**Athens County:** Ohio Fuel's Kincade, Jr. 7, 1,660,000 gas, 1249 ft.

Ohio Fuel's Heck 1, 364,000 gas, 1118 ft.

N. C. Leeper's Bryson 28, abnd 389 ft.

Ohio Fuel Gas Co.'s Sunday Creek 7246, abnd 972 ft.

**Fairfield County:** City Nat. Gas Wks.' McCandish 2, 126,240 gas, 2477 ft.

**Holmes County:** Johnston et al's Collier-Ferris 1, 279,000 gas, 3078 ft.

Ohio Fuel's Martin 1, abnd 3375 ft.

Ohio Fuel's Baldner 1, abnd 2854 ft.

**Licking County:** Hazlett & Davis' Fisher 3, 80 bbls, 3247 ft.

**Meigs County:** Utsinger's Lewis 1, abnd 1224 ft.

H. B. Walker's Griffin 2, 2,380,000 gas, 1638 ft.

**Morgan County:** Bern O & G Co's Huffman 7, 50,000 gas, 1600 ft.

**Perry County:** Preston Oil Co.'s Wilson 4, abnd 3287 ft.

Preston's Madden 2, 156 bbls, 3219 ft.

Preston's Winegardner 1, abnd 2813 ft.

**Stark County:** Lyons et al's Ewing 1, 476,000 gas, 4832 ft.

Lyons' Barber 5, 3,400,000 gas, 4914 ft.

**Washington County:** E. W. Hass' Kuntz 6, 5 bbls, 802 ft.

R. L. Smithberger's Ullman 2, abnd 1780 ft.

### PENNSYLVANIA COMPLETIONS

**Armstrong County:** Shelocta's Timblin 1, abnd 3721 ft.

Apollo Gas Co.'s Fulton 1, 80,000 gas, 3335 ft.

**Greene County:** Mfgrs. Light & Heat Co.'s Grinnage 1, 759,000 gas, 3096 ft.

Peoples Natural Gas Co.'s Smith 1, 1,054-000 gas, 2373 ft.

John Conklin et al's Mestrezat 1, 3,000,000 gas, 1497 ft.

### DRILLED DEEPER

**Fayette County:** Whaler-Powers Oil & Gas Co.'s Woodrich 1, 26,000 gas, 1417 ft.

**Greene County:** Equitable Gas Co.'s Hathaway 1, 132,000 gas, 1986 ft.

### WEST VIRGINIA COMPLETIONS

**Clay County:** Pittsburgh & West Virginia Gas Co.'s Elk River 7870, abnd 2240 ft.

Pittsburgh & West Virginia Gas Co.'s Elk River 7889, 470,000 gas, 1717 ft.

Virginian Gasoline & Oil Corp.'s Brown, Swann & Goshorn V1327, 3 bbls, 1700 ft.

**Gilmer County:** W. H. Mossor's Edwards 1, abnd 2500 ft.

Wolfe Pen Oil & Gas Co.'s Bush 1, 50 bbls, 1720 ft.

**Jackson County:** United Fuel Gas Co.'s Scarberry 5094, 6,755,000 gas, 5083 ft.

Spartan Gas Co.'s Carpenter 1, 5,512,000 gas.

Mullins Gas Co.'s Young 1, 3,584,000 gas, 5049 ft.

**Kanawha County:** Hope Natural Gas Co.'s Dickinson 8621, 152,000 gas, 2446 ft.

Columbian Carbon Co.'s Dodd 685, abnd 5284 ft.

Godfrey L. Cabot's O'Dell 1073, 1,384,000 gas, 1598 ft.

Pure Oil Co.'s Federal Coal Co. 90, abnd 3204 ft.

**Lincoln County:** Cambridge Gas Co.'s Escue 1, 3 bbls and 50,000 gas, 2426 ft.

United Carbon Co.'s Lincoln Mineral Co. 6, 25,000 gas, 4075 ft.

**Nicholas County:** T. G. Ramsey's Backus 1, 340,000 gas, 1757 ft.

**Putnam County:** Summit Gas & Development Co.'s Riddle 1, 45,000 gas, 1730 ft.

Godfrey L. Cabot, Inc.'s, Putnam Co. 1062, 2,439,000 gas, 5232 ft.

Reishman Oil & Gas Co.'s Pike 1, 133,000 gas, 4478 ft.

**Ritchie County:** Pine Valley Producing Co.'s Strickler & McGinnis 2, 3 bbls, 1628 ft.

Leavitt & Black's Donnelly 1, abnd 1820 ft.

**Upshur County:** Pittsburgh & West Va. Gas Co.'s Hyre 7883, 70,000 gas, 4267 ft.

Cumberland & Allegheny Gas Co.'s Darnell 333, 1,431,000 gas, 1718 ft.

**Wood County:** South Penn Nat. Gas Co.'s McPherson 1, abnd 2400 ft.

**Wirt County:** W. C. Patterson's Riley 5, abnd 1368 ft.

Louis Reed's Rex 1, abnd 2550 ft.

# Men in the Industry's News

**JOE MARITT** has been made garage foreman for Cities Service Oil Company at Bartlesville after transfer from Oklahoma City.

**J. W. RAYBURN,** Tide Water Associated Oil Company, Tulsa, has been re-elected president of Petroleum Motor Transport Association of Oklahoma; C. E. Jackson, a past president, and Homer Newby, Cities Service Oil Company, Bartlesville, have been elected vice presidents and W. H. Esser, Shell Oil Company, Tulsa, has been elected secretary-treasurer.

**J. W. BOYD** has succeeded A. W. Hubbell, resigned, as manager of the gasoline pipe line division of Phillips Petroleum Company at Bartlesville.

**VANCE ROWE,** chairman, Mid-Continent Oil and Gas Association's nomenclature committee, called a meeting of the group for December 30 at Tulsa for final consideration of 1942 Kansas and Oklahoma field titles.

**T. P. MACE** has been transferred from Oklahoma City office of Cities Service Oil Company to Bartlesville to take charge of surplus-materials division.

**EDGAR KRAUS** has been transferred from Carlsbad, New Mexico, to Dallas, Texas, where he will be regional geologist for The Atlantic Refining Company.

**WENDELL THAYER** of Los Angeles has been appointed special assistant to Reese Taylor, president of Union Oil Company.

Thayer, long identified with the industry through association with various of its administrative organizations and as a writer, is recognized as an authority on oil activities in California. In recent years he has devoted himself almost exclusively to the writing field, holding the post of Southern California editor of The Wall Street Journal, and additionally serving as The Oil Weekly's editorial representative in California. In his new post with Union Oil Company, Thayer will be concerned chiefly with government-labor relations.

An alumnus of the University of California at Los Angeles and of Loyola Law School, Thayer for a time was associated with the Los Angeles Stock Exchange. Subsequently, he was in the securities business, with H. J. Barneson & Company, and then he joined the staff of the California State Oil Umpire. He has been with The Wall Street Journal since 1935.

**W. M. McELROY,** for more than 25 years associated with General Petroleum Corporation, has been appointed manager of the company's refining department.

**PVT. JACK M. GUITERMAN,** 35, oil scout and landman for The Texas Company in West Texas, prior to entering the United States Army Air Corps last May, was fatally burned in an airplane mishap while on duty in Liberia.

**CAPT. JOHN W. HERBERT,** 43, Fort Worth civic leader and president of Herbert Oil Company and Falcon Company, was killed November 24 while on a combat mission for the United States Army Air Corps in New Guinea. He served with the United States Marines in World War I, and later won a commission as a pilot in its air forces. Upon his return to civilian life he sought adventure in the post-war boom at Burkburnett as a truck driver. This led to his entry into the oil business and the discovery of several pools in Texas. Captain Herbert was a native of New York City.

**B. P. SPANN,** for the past eight years advertising manager of Gardner-Denver Company, Quincy, Illinois, has received his commission as Lieutenant, Junior Grade, in the Supply Corps of the United States Naval Reserve, and is now stationed in Philadelphia. On leave of absence from the Gardner-Denver Company, Lieutenant Spann will resume his duties as advertising manager after the war.

Compression and Natural Gas

**OIL BOOKS**

| | |
|---|---|
| **Petroleum Dictionary**—Hollis P. Porter | $ 3.00 |
| **Alignment Charts**—Thomas T. Gill | 3.50 |
| **Absorption & Extraction**—Thos. K. Sherwood | 3.50 |
| **Arc Welding in Design, Manufacturing & Construction** | 1.50 |
| **Elements of Chemical Engineering**—Badger & McCabe | 5.00 |
| **Elements of Fractional Distillation**—Robinson & Gilliland | 3.00 |
| **Flow of Homogeneous Fluids through Porous Media**—M. Muskat | 8.00 |
| **Handbook of Butane-Propane Gases** | 5.00 |
| **Handbook of Chemistry & Physics** | 3.50 |
| **Lubricating Greases**—E. N. Klemgard | 15.00 |
| **Petroleum Refinery Engineering**—W. L. Nelson | 6.00 |
| **Petroleum Refining and Manufacturing Process**—M. J. Japour | 5.00 |
| **Heat Transmission**—Wm. H. McAdams | 5.00 |
| **Modern Methods of Refining Lubricating Oils**—Kalichevsky | 6.00 |

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# Squeaks from the Bull Wheel

### "Sour Puss"

"How are you this morning?"
"All right."
"Well, you ought to notify your face!"

### Wartime Problems

The problem of how to summon an office girl, first on staff, was settled for the Minneapolis Star Journal editorial department by the copy desk crew who christened the new messenger "Miss Boy."—Editor & Publisher.

### Found!

A lawyer came to London to locate a young woman who had fallen heir to a large fortune. The police were called in to aid in the search, and placed the case in the hands of a clever and personable young detective. Several weeks passed by without any information, and the lawyer was beginning to feel deeply concerned over the matter, when the young detective appeared and smilingly informed him he had located the heiress.

"Where is she?"

"At my place. I married her yesterday."

### Who Doesn't?

"Don't you admire a good loser?"

"Indeed, I do, particularly if he loses to me."

### Stunted!

"It's this old devil of a husband of mine." He's hittin' the bottle agin, and if he don't stop it's gonna kill him!"

"Isn't he ninety-seven already?"

"Yessah, but I just been tellin' him if he hadn't been boozin' all these years he might be a hundred by now!"

### All Alone

A sailor, whose courage at sea was the talk of every ship he sailed in, admitted a terror of air raids. So, when he was granted shore leave, his mates were not surprised when, unashamed, he tucked his hammock under his arm and announced that he intended to swing it for the night in the deepest shelter he could find.

Having selected his shelter, he was astonished to find it unoccupied. He slung his hammock and went to sleep. Next morning, vacating the shelter, he was greeted by an astonished policeman: "Is there anybody else down there?"

"No," the sailor replied, "I was quite alone."

"Not quite," said the bobby, "there's a delayed-action bomb down there, too. I've been here all night, waiting for it to go off."

### One Cure

"Your wife used to be terribly nervous. Now she's as cool and composed as a cucumber. What cured her?"

"The doctor did. He told her that her kind of nervousness was the natural result of advancing age."

### Knew What She Wanted

Getting railroad accommodations is another thing that seems to get new secretaries all in a dither. One called a ticket office last week and finally got a clerk on the wire.

"I want a round trip ticket," she began.

"Yes, yes, lady," said the clerk. "But where to?"

"Why," she exclaimed, "back here, of course."

### Such Foresightedness

Boy Friend—We're gonna have a swell time tonight, Hon. I've got three seats for the movies.

Sweetie—Three seats? What do we want with three seats?

Boy Friend—One for your Pop, one for Mom, and one for your kid brother.

### Wishful Reply

Spinster—What is the number of my suite? Hope it isn't 13.

Hotel Clerk—No, madam, you're suite 16.

Spinster — Now, now — naughty, naughty.

### As He Saw It

The teacher was attempting to explain the meaning of certain words to her class. She came to the word "sufficient."

"Now," she said brightly, "let us suppose there was a cat here and I gave it a saucerful of milk, which it drank. Then I gave it another saucerful, and it drank it all. But when I gave it a third saucerful it would only drink one-half of it We can then say that the cat had sufficient. Now, Tommy, what is the meaning of sufficient?"

"Please, teacher," replied Tommy, who had been eagerly attentive, "it means a catful of milk."

### Following Directions

"I was so embarrassed last night when I found you sitting on Paul's lap."

"Why, mother, that's what you told me to do."

"Told you what?"

"You said if he ever got too smart, to sit on him."

### Not Responsible

"Dey had me up befoah my church las' night fur dancin'."

"I don't suppose you were guilty, were you, Mose?"

"Yes, sur, I was guilty of dancin' and dey proved it on me too; but I come clear."

"How did you manage it?"

"Well, suh, after dem other boys had testified ag'inst me my friends all got up and testified dat, though it was true I danced, I was so drunk at de time I didn't know what I was doin'. So I come clear, and the preacher 'scused me."

### Cluck, Cluck

The government wants us farmers to raise one hundred million more chickens, cause of meat shortage.

Goodness, gracious me. Whose a' goin' to take care of that many hens?

The roosters.

### Goodness Me!

He: "There's a certain reason why I love you."

She: "My goodness!"

He: "Don't be absurd."

### Dream Girl

"Is this candy good?"

"As pure as the girl of your dreams, my lad."

"I'll have a package of gum."

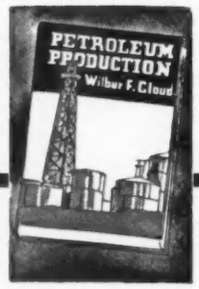
### After Business

When asked by teacher, all the little boys and girls indicated a desire to go to heaven except Abie.

"Why not, Abie?" asked teacher.

"Vy should I ven Papa says bizness has gone to hell?"


**PETROLEUM PRODUCTION**

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# Notes for the Equipment Buyer and User

## Superior Engine Division of National Supply Receives Award

Presentation of Maritime Commission awards in recognition of outstanding production achievement was made to the Superior Engine Division of The National Supply Company at Springfield, Ohio, December 17.

In presenting these awards, Rear Admiral H. L. Vickery, vice chairman of the Maritime Commission, said that company was one of the first concerns in the nation to "jump in at the beginning and hold the line while industry as a whole was catching up with wartime demands."

A. E. Walker, president of The National Supply Company, accepted the "M" pennant and the Victory Fleet Flag on behalf of the employes. "We are grateful," he said, "for this recognition of a patriotic effort to serve our country. What has been done is only a good beginning, and we promise that past records will not only be maintained, but will be excelled in the future."

Following the presentation of Employe Merit Badges, which were accepted by P. J. Shouvlin, founder of the Superior Engine Company, refreshments were served to over 1800 employes and their guests.

**Left to right: Arch F. Campbell, manager of engine sales, Superior Engine Division of The National Supply Company; Lt. W. A. Weber, United States Maritime Commission; C. R. Barton, vice president of The National Supply Company; Rear Admiral H. L. Vickery, Maritime Commission; A. E. Walker, president of The Natonal Supply Company; John W. Bricker, governor of Ohio, and A. W. McKinney, vice president of The National Supply Company.**

## Security Engineering Company Receives "M" Award

The United States Maritime Commission's "M" burgee was awarded the Security Engineering Company of Whittier, California, recently in ceremonies at the plant and attended by about 2000 persons.

In addition to the "M," the commission awarded the Victory Fleet Flag and Labor Merit Badges to employes. The honors were awarded for the company's record in converting from peacetime manufacture to war production, for the originality of production methods employed, for simplification of product design which further increased production, and for the high standards of quality maintained from the very first despite difficult production schedules.

Charles E. Walsh, Jr., presented the pennant and W. E. Sievers, executive vice president, accepted the award.

**Charles E. Walsh, Jr., left, chief of Procurement Section, Production, Division, United States Maritime Commission. Center, W. E. Sievers, executive vice president of Security Engineering Company. Right, Otto Hammer, vice president and chief engineer of Security Engineering Company.**

## Broderick and Bascom Men Win Army-Navy Renewal Star

Employes of Broderick & Bascom Rope Company, St. Louis, have won a renewal star from the Army and Navy for a continuation of the high record of war production which earned the All-Navy "E" for them last April. The added star—affixed to a new joint service flag and presented at a ceremony December 16—denotes extension of the honor for another six months.

Commander W. F. Veatch, commander of the Sixth Naval Reserve Area, handed the pennant to Charles E. Bascom, secretary-treasurer, who accepted it on behalf of the organization. Colonel Merle H. Davis, chief of the St. Louis Ordnance District, pinned the new Army-Navy "E" employe badge on Henry Niemeier, representing his follow workers. D. Larkin, vice president and general manager, presided and introduced the other Army and Navy officers.

Describing the company's product as

a "strand in the invisible noose which each day is drawing a little tighter around the Axis," Commander Veatch pointed out that a piece of wire rope "may spell the difference between a smashing victory or a costly defeat."

### Cooper-Bessemer Company Receives Maritime Award

The Cooper-Bessemer Corporation, Grove City, Pennsylvania, was presented the Maritime Commission "M" in ceremonies recently at Grove City.

Rear Admiral Howard L. Vickery, vice chairman of the Maritime Commission and chairman of the board of awards, made the presentation. He honored Cooper-Bessemer workers who were cited for their sustained, top-speed production of such critical equipment for ships of the United Nations.

The high degree of cooperation between workmen and managers at both the Grove City and Mount Vernon, Ohio, plants was well expressed by Gordon Lefebvre, Cooper-Bessemer vice president and general manager, who accepted the award on behalf of the organization.

### Lining Wooden Barrels With Silicate of Soda

The wooden barrel again steps into the spotlight for liquid materials formerly shipped in metal drums. Many commodities, such as oils, creep through the tiniest cracks. Consequently, a protective lining is required in many instances.

The January issue of "Silicate P's & Q's," published by Philadelphia Quartz Company, 121 S. Third St., Philadelphia, reviews the testing and lining of wooden barrels with silicate of soda.

**WAR MEMO:**

**The aims behind the War Bond Payroll Savings Plan are worth repeating over and over:**

**1. To help pay the stupendous production costs of winning this war.**

**2. To siphon into production channels that portion of America's *current income* which would otherwise flood the Nation with inflationary cash.**

**3. To create individual backlogs of financial security for use during the industrial readjustment after the war.**

**4. To create a Nation-wide saving habit which will serve the interests of both Capital and Labor after the war.**

**Keep after that "10% of gross payroll goal"! Buy War Bonds to the limit yourself—encourage your employees to do likewise!**

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*Standco Brake Lining Co. —
Tank Seal Products Co. —
Texaco Development Corp. —
*Texas & Louisiana Tool Co. —
*Texasteel Manufacturing Co. —
The Thermoid Co. —
*Thompson Tool Co. —
*Thornhill-Craver Co. —
Treasury Department —
*Tretolite Co. —
*Union Carbide and Carbon Corp. —
*Union Wire Rope Corp. —
*Unit Rig & Equipment Co. —
United States Steel Corp. 24-25
*Universal Atlas Cement Corp. —
Visco Products Co. —
Warner & Swasey Co. —
Waugh Laboratories —
*Waukesha Motor Co. —
*Westinghouse Electric & Mfg. Co. —
*The Wheland Co. —
*The Whitney Chain & Manufacturing Co. —
Whitney National Bank —
*Wickwire Spencer Steel Co. —
*J. H. Williams & Co. —
*Wilson Manufacturing Co. —
Wilson Supply Co. 33
*Web Wilson Oil Tools Co. —
*Wisconsin Motor Corp. —
*Worthington Pump & Machinery Corp. —
Wyatt Metal & Boiler Works —
York Oilfield Supply Co. —
The Youngstown Sheet & Tube Co. —